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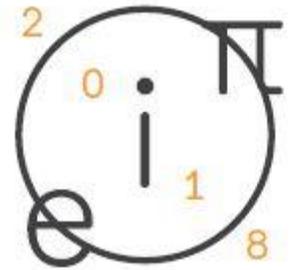
EMPIRICAL STUDIES IN PSYCHOLOGY

MARCH 24-26TH, 2018
FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE

INSTITUTE OF PSYCHOLOGY
LABORATORY FOR EXPERIMENTAL PSYCHOLOGY
FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE

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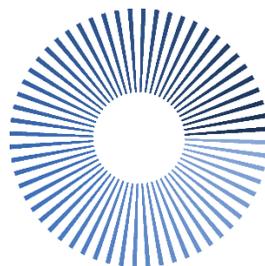
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Naïve discrimination learning approach to polysemy

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Abstract

In this paper, the focus of the investigation is the power of the computational model which is based on the principles of discrimination learning to predict processing latencies of polysemous nouns. Discrimination learning has been shown as a powerful principle that can account for multiple language phenomena, such as various frequency effects, various morphological phenomena and so on. However, the application of the model in predicting semantic effects is at its very roots. Here, the model is applied to simulate processing of words with multiple related senses, by mapping the bigrams from the input to the output that is represented by an array of words that co-occur with the target word. The simulated reaction time was positively correlated with empirically observed processing latencies. Additionally, the regression model fitted to simulated reaction time revealed a significant effect of lemma frequency, word familiarity, number of senses, and redundancy of sense probability distribution. These effects mirrored the pattern of the effects observed with empirical reaction time, the only exception being the reversal of the direction of the number of senses effect. Taken together, the results add to the body of research that links polysemy to context variability and additionally demonstrate how such a link can be related to learning.

Keywords: distributional semantics; naive discrimination learning; polysemy.

Introduction

Discrimination learning, as defined by Rescorla (1988) is the process through which an organism learns the structure of the environment by discriminating the stimuli that serve as cues which are good predictors of the certain outcome from the stimuli that do not contribute to such prediction. Learning is thus seen as the dynamic process of the competition of cues, and knowledge, including language, as the system of cue-outcome association that is constantly updated (Ramscar, Yarlett, Dye, Denny, & Thorpe, 2010).

In order to further apply this approach to language processing Baayen, Milin, Filipović Đurđević, Hendrix, & Marelli (2011) have proposed Naïve discriminative reader (NDR), a simple computational model based on the equations of Rescorla and Wagner (1972). The model includes no hidden layers and no feedback activation. The only process that the model subsumes is the mapping of the language input (e.g. bigrams) to the output (e.g. word meaning). The model has proven fruitful in accounting for multiple language phenomena, such as word frequency effect (Baayen, 2010), N-gram frequency effect (Baayen, Hendrix, & Ramscar, 2013), morphological family size effect (Baayen, et al., 2011), inflected paradigm typicality effect (Baayen, et al., 2011; Filipović Đurđević & Gatarić, 2018; Filipović

Đurđević & Milin, 2018) and so on. However, in the previous demonstrations, the outcomes were treated as the pointers to the locations in multidimensional semantic space. Although semantics was not conceptually seen as a localized phenomenon, technically it was implemented in such a way.

In this paper, we aim to broaden the implementation of the model outcomes by applying the distributional semantics approach, i.e. by using co-occurrence vectors to specify the meaning of the word at the outcome level in the model. The distributional semantics models have been flourishing during the course of several decades to show that multiple phenomena related to processing of word meaning can be accounted for based on co-occurrence of words (Landauer and Dumais, 1997; Lund and Burgess, 1996; but lately also Mikolov, Sutskever, Chen, Corrado, & Dean, 2013; Mikolov, Chen, Corrado, & Dean, 2013). The meaning of a word is represented as the vector or a simple array of frequencies of the target word co-occurring with each of the context words (selected in advance). It has been demonstrated that such vectors do capture certain aspects of meaning, the most famous demonstration being the one of predicting human TOEFL synonymy choices based on the cosine distance between the vectors representing the words in question (Landauer & Dumais, 1997).

The focus of the current research is on the polysemous words, i.e. words that refer to multiple related senses (e.g. *paper* as scientific paper, or *paper* as material). Processing advantage of polysemous words compared to unambiguous words was observed in numerous studies (Beretta, Fiorentino, & Poeppel, 2005; Klepousnitou, 2012; Pylkkänen, Llinas, & Murphy, 2006; Rodd, Gaskell, & Marslen-Wilson, 2002; for a comprehensive review see Eddington & Tokowicz, 2015). Additionally, it was shown that an increase in a number of senses was followed by a decrease in processing latencies. Research in Serbian revealed that, in addition to a number of senses, the balance of sense probabilities also affected processing: the more balanced relative frequencies of individual senses were, the faster the processing was (Filipović Đurđević, 2007). The balance of sense probabilities was operationalized as information theory measure of redundancy (Cover & Thomas, 1991; Shannon, 1948), higher redundancy being related to more balanced sense probabilities. Evidence from several lines of research suggested that the observed processing advantage of polysemous words was related to variability in contexts in which polysemous words appeared (Adelman, Brown, Quesada, 2006; Filipović Đurđević & Kostić, 2009).

In this research, this hypothesis was tested by applying the discrimination learning approach (Baayen et al., 2011) to simulate the effects of polysemy in the Serbian language.

Method

Polysemous words were selected from Filipović Đurđević and Kostić (2017) database of polysemous nouns. The selection was based on the frequency of occurrence in Ebart media database (http://www.arhiv.rs), which was used for building semantic vectors. Only the words that occurred more than 500 times in the database were selected, which led to the selection of 130 polysemous words. For these words, processing latencies were taken from visual lexical decision task experiment of Filipović Đurđević (2007). Data on (log) lemma frequency were taken from Kostić (1999), whereas data on word length in letters, word familiarity, number of senses, and redundancy were taken from Filipović Đurđević and Kostić (2017).

The simulation

The simulation which is based on naïve discriminative learning was conducted in **R** statistical software (R Core Team, 2017), by using **ndl** package (Arppe et al., 2015), following the procedure of Baayen et al. (2011).

Specification of model input

The input consisted of bigrams that constituted each word form in the nominative singular, as presented in the experiment (e.g. for word *linija* the input bigrams would be: *#l, li, in, ni, ij, ja, a#*).

Specification of model output

The output consisted of the lemma associated with the given word form and of the semantic vectors of that word form. The vectors were built separately for individual occurrences of all inflected forms of the target words by moving a 7-point window through the raw text of Ebart media database (http://www.arhiv.rs) of approximately 65 million words (Filipović Đurđević & Kostić, 2009; Schütze, 1998). These vectors were simply arrays of context words that co-occurred with the target polysemous word (three positions to the left, or three positions to the right).

Following the simplest approach described in Baayen et al., (2011), the simulated reaction time was estimated as the inverse summed activation for the word form which was presented in the experiment in which the empirical reaction time was collected (Filipović Đurđević, 2007).

Results

The simulated reaction time was positively correlated with reaction time observed in Filipović Đurđević (2007): r = .334, *t* (128) = 3.880, *p* = .0002 (95% CI: r = .17 – r = .48; Figure 1).
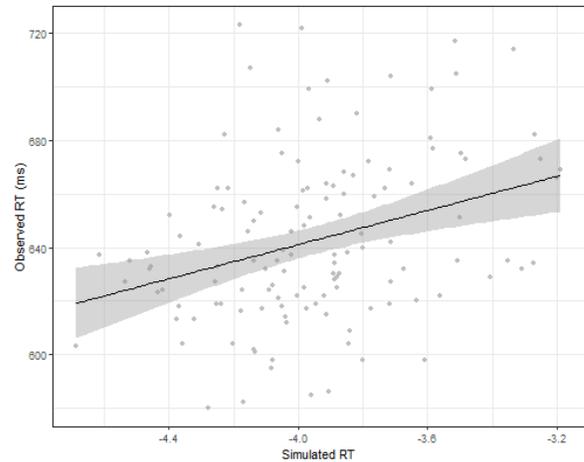
Figure 1: The relation between the simulated and the observed processing latencies.

Additionally, linear regression model fitted to simulated reaction time revealed a significant effect of lemma frequency, word familiarity, number of senses, and redundancy of sense probability distribution (Table 1). All of the observed effects were comparable to those in the model fitted to behavioural data. Importantly, an increase in redundancy was related to an increase in both behavioural RT and simulated RT. However, although there was a significant effect of the number of senses on simulated RT, the direction of this effect was reversed as compared to that observed with fitting behavioural RT.

Table 1: Coefficients from linear regression fitted to simulated reaction times for 130 polysemous nouns.

	Estimate	SE	t	Pr(>|t|)
Intercept	-4.19	.08	-50.96	<.001
Word length in letters	-.00	.03	-.05	.960
(log) Lemma frequency	-.09	.03	-3.05	.003
Word familiarity	-.06	.03	-2.05	.042
Number of senses	.06	.03	2.16	.033
Redundancy	1.49	.49	3.04	.003

Discussion

The discrimination learning approach to language processing has been successfully combined with distributional semantics to account for processing of Serbian polysemous nouns. The processing latencies which were simulated in this way were related to standard psycholinguistic variables, as well as to descriptions of polysemy: number of senses and balance of sense probabilities (redundancy). However, while the latter affected simulated latencies in the expected direction, the direction of the former was reversed, thus opening the space

for future investigation. In spite of this, it can be concluded that the pioneering attempt to bring together the two approaches seems to be the fruitful ground to further understand the processing of lexical semantics in the light of simple learning principles.

Acknowledgements

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The Role of Grapheme Characteristics on the Processing of Latin and Cyrillic Words

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Abstract

Bialphabetism is a phenomenon observed in the Serbian language, which refers to the fact that the same word can be written in two alphabetic systems. The aim of this research is to examine the role of grapheme characteristics in the processing of Cyrillic and Latin alphabet. For that purpose, we manipulate with the amount of the available information for the grapheme. Six experimental situations were obtained by combining two factors – alphabet (Cyrillic and Latin) and visual availability of the information (whole word visible, visible upper part or lower part of the word). The lexical decision task was used. 79 students, who first learned Cyrillic alphabet and do not have preferred alphabet, were examined. Within each experimental situation, 60 words (masculine, nominative, singular, six character lengths) and 60 pseudowords were shown. A significant difference was found between experimental situations in the processing time. The results show that the upper part of the Latin graphemes contains the same amount of information needed for processing as the whole graphemes, while the lower part has a very low informative value. The assumption of greater informativity of the upper part of Cyrillic graphemes is not confirmed. These results need to be checked on other types of fonts and different type of letter.

Keywords: bialphabetism, Latin, Cyrillic; grapheme features; visual degradation of a word

Introduction

In Serbian, as in several other languages, there is an unusual phenomenon called bialphabetism. The same word can be written in two alphabetic systems, Latin and Cyrillic, where each letter has its own phonemic interpretation that does not change (Vejnović & Jovanović, 2012). A number of studies examined the differences in the processing of these two alphabetic systems, based mainly on the measurement of the speed and accuracy of reading and recognizing letters (Rot & Kostić, 1986; Ognjenović, Škorc, & Morača, 1995).

There are researches that were based on the processing of complete words (not letters) and they showed certain differences between Latin and Cyrillic words (Vejnović & Jovanović, 2012; Vejnović, Dimitrijević, & Zdravković, 2011; Pašić, 2004; Šokčević, Dimitrijevć, & Gvozdenović, 2013). The most common factors for the differences in the processing of these words are stated: a greater exposure to one of two systems (or more frequent use), the order in which

the alphabetic systems are accepted and the visual characteristics of graphemes. The aim of this study is the examination of the role of this third factor.

One way to study this problem is to manipulate the amount of available information. Namely, Huey (1968) claimed that the upper part of the letters or words is more important for processing than their lower part. This regularity has been confirmed in the work of several authors (Blais et al., 2009; Perea, Comesaña, Soares, & Moret-Tatay, 2012; Perea, Comesaña, & Soares, 2012). If the upper parts of words are not visible, the recognition time is significantly longer than the recognition of words where the lower parts are not visually accessible. The question of this research is whether this regularity can be observed in both alphabetic systems of Serbian language.

Method

Sample

The total of 107 participants was examined. All participants were undergraduate students of the University of Banja Luka. The final sample consisted of 60 subjects who first learned Cyrillic alphabet, do not have preferred alphabet in reading or writing and had less than 25% of errors in experimental tasks.

Design and Procedure

There were six experimental situations that were obtained by combining two non-repeated factors: *alphabet* (Cyrillic and Latin) and *visual availability* of information (visible whole word, visible upper part of the word and visible lower part of word).

Within each experimental situation, 120 stimuli (60 words and 60 pseudowords) were shown. Stimuli were 60 nouns (masculine, nominative, singular) of six character lengths and written with Arial font 48. Other 60 stimuli were 60 pseudowords of the same structure as words. Example of stimuli is shown in Figure 1.

двобој   dvoboj

двобој   dvoboj

двобој   dvoboj
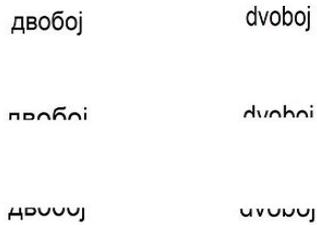
Figure 1. Examples of stimuli in the experiment

The lexical decision task was used in the experiment. The reaction time and the number of errors were observed. Participants were randomly assigned to one of the experimental situations and were tested individually. In experimental situations where the lower parts of Latin words were visible, participants have achieved a low accuracy, so this experimental situation has not been considered.

Results

A significant difference between the experimental situations in the reaction time (RT) of the words was found ($F(4) = 141.1$, $p < .001$). Scheffe post hoc analysis showed that the average RT could be divided into three groups: (1) whole Cyrillic words; (2) whole Latin words and visible upper part of Latin words; (3) visible upper part of Cyrillic words and visible lower part of Cyrillic words (Figure 2). The highest percentage of errors was made in an experimental situation related to Latin words with visible lower parts, so this situation has not been considered in the analysis. A significant effect was also obtained in pseudowords ($F(4) = 486.2$, $p < .001$), with significant differences in mean RT between all experimental situations (Figure 2).
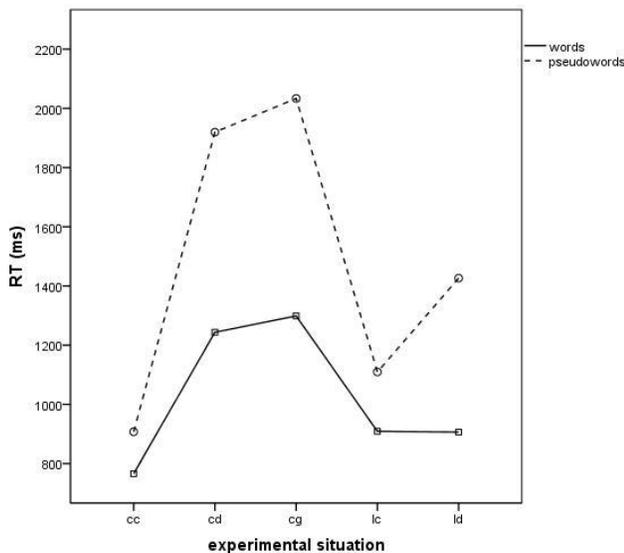
Figure 2. Response latency depending on the *alphabet*, *lexicality* and *type of visual word degradation*. Note: *cc* – visible whole Cyrillic words, *cd* – visible upper part of Cyrillic words, *cg* - visible lower part of Cyrillic word; *lc*

– visible whole Latin words, *ld* – visible upper part of Latin words.

The increment in processing time of words and pseudowords ranges between 75ms and 400ms, depending on the alphabet and visual degradation of graphemes.

Discussion and conclusion

The specificity of the Serbian language is reflected in the possibility of writing the same word in two alphabetic systems – Latin and Cyrillic. But, words written in different alphabets are not processed in the same way Vejnović, Jovanović, 2012; Vejnović, Dimitrijević, & Zdravković, 2011). This research came from the assumption that these differences are based on the specificity of graphemes. A central point in the examination of graphemes is distinctiveness, a characteristic that one grapheme is easily discriminated in relation to another. Such a process includes the identification of the most prominent features of individual graphemes (Fiset et al., 2008). To investigate this, we manipulated the visibility of the graphemes in words. The criterion for manipulation was a horizontal line that cuts and divides the graphemes on the upper and lower half. In a number of studies, it has been shown that in the different languages (English, Spanish, French, Chinese) advantage in reading have the upper parts of words (Bias et al., 2009; Perea, 2012; Perea et al., 2012; Shimron & Navon, 1980; Tsao & Wang, 1983). This can be explained by upward-balanced word and more critical information in upper parts of single grapheme (Tejero, Perea & Jiměnez, 2014).

The results obtained in this study in the Serbian language partly deviate from the regularity established in other languages. Experimental degradation of Cyrillic words slows down processing time and does not confirm the assumption of greater informability of the upper part of graphemes in words. In the Latin alphabet, the results show that the upper parts of graphemes contain the same amount of information needed for processing as the whole graphemes, while the lower parts have a very low informative value. One possible explanation of these results is based on line terminations. Fiset et al. (2008; Blais et al, 2009) have found that this ends of letter parts are the most important features for its visual identification. Line terminations are clear indicators of the lack of curvatures and absence of intersections, which makes it easier to recognize graphemes. The differences between Latin and Cyrillic alphabets could be based on the number of line terminations, especially in the upper parts. Latin graphemes have fewer line terminations (mostly one) in the upper half in relation to Cyrillic graphemes. Also, the Latin graphemes have a certain number of specific extensions in the upper parts (č, ć, š, ž) that makes them easily recognizable. Likewise, the lower parts of a large number of Latin graphemes have the same form which is why they are hard to distinguish. On the other hand, for efficient processing in the Cyrillic alphabet, visual availability of complete graphemes is necessary.

The results obtained in this study need to be checked on other types of fonts (e.g. serif fonts) as well as on a different type of letter (written or capital).

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Evaluation of the Everyday Memory Questionnaire-Revised (EMQ-R)

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Abstract

The goal of this research was to conduct a preliminary Bosnian/Serbian general sample validation of the Everyday Memory Questionnaire-Revised (EMQ-R). The sample comprised 504 participants (51.06% females) from Bosnia and Herzegovina, of the average age of 27.79 years. Out of several tested factor models, a bifactor model, which assumes one general (memory disturbance) factor, comprised of all EMQ-R items, in addition to domain-specific Retrieval and Attentional Tracking factors, showed the best fit. Additional analyses suggested that a simple total-scale summary score is probably the most appropriate operationalization of the EMQ-R on a general sample. The EMQ-R's correlated with other constructs in line with the expectations. It was related to higher Neuroticism and lower Conscientiousness, as well as to higher depressiveness, for which it was incrementally predictive over and beyond the Big 5 personality traits. We recommend the use of EMQ-R on Bosnian/Serbian general (i.e., non-clinical) samples. However, validations on relevant clinical samples are yet to be conducted.

Keywords: everyday memory, EMQ-R, Big 5 personality traits, depressiveness, questionnaire validation

Introduction

The Everyday Memory Questionnaire (EMQ) is a subjective measure of memory failure in everyday life, developed to study the effects of closed-head injuries on memory performance (Sunderland, Harris, & Baddeley, 1983, 1984), even though it can also be used in non-clinical samples (Cornish, 2000; Royle & Lincoln, 2008). The original EMQ consisted of 35 items (Sunderland et al., 1983). Over the years, several new versions were developed, which used different numbers of the original EMQ items and different response scales (Calabria, et al., 2011; Sunderland et al., 1984; Tinson & Lincoln, 1987). In all versions, EMQ items measure an absolute frequency (e.g., "once a day") of a particular "memory failure".

Inconsistent factor structures have been reported for different EMQ version and samples (e.g., Calabria, et al., 2011; Cornish, 2000; Eflikides et al., 2002; Richardson & Chan, 1995; Royle & Lincoln, 2008).

The EMQ-R (Royle & Lincoln, 2008) is fairly recent, short (13-item) EMQ version, validated on MS, stroke and non-clinical samples (Royle & Lincoln, 2008). It contains two factors: Retrieval and Attentional Tracking, with an additional 2-item-factor, without a name or clear interpretation (the items refer to starting to read something we have already read, and forgetting where things are kept) (Royle & Lincoln, 2008). Retrieval factor indicates problems with recalling information from long-term memory. Attentional tracking is related to problems with attention or working memory.

The goal of this research is to conduct a preliminary Bosnian/Serbian general sample validation of the EMQ-R, focusing on its factor structure and convergent, divergent, and predictive validity. Specifically, we are interested in EMQ-R's associations with the Big 5 personality traits and depressiveness. Previous research has shown that higher Neuroticism (Klaming, Veltman, & Comijs, 2017) and lower Self-directedness (Rönnlund, Vestergren, Mäntylä, & Nilsson, 2011) (Self-directedness corresponds to low Neuroticism and high Conscientiousness from the Big 5; De Fruyt, Van De Wiele, & Van Heeringen, 2000) predict memory problems. Thus, we would expect EMQ-R to correlate with higher Neuroticism and lower Conscientiousness, but not to other Big 5 traits. Furthermore, since memory problems are common during the depression (Bruce & Arnett, 2004), we would expect EMQ-R to correlate with depressiveness, potentially incrementally predicting it over the Big 5 traits.

Method

Sample

The sample comprised 504 conveniently selected general population participants (51.06% females) from Bosnia and Herzegovina. The average age was 27.79 (*SD*=8.39) years. Participants were recruited by an anonymous online survey.

Instruments

EMQ-R. (Royle & Lincoln, 2008) has two subscales: Retrieval (7 items) and Attentional Tracking (4 items), with two items that are added only when a total score is used. There are 13 items, answered on a 5-point scale (from "0 = Once or less in the last month." to "4 = Once or more in a

day."). With permissions, the EMQ-R was translated (and adapted) to Serbian for this study.

Other measures. BFI-44 (John, Donahue, & Kentle, 1991) was used as a measure of the Big 5 traits, and PHQ-9 Kroenke & Spitzer, 2002; Kroenke, Spitzer, & Williams, 2001; Bosnian-Croatian-Serbian validation: Subotić, 2015) was used as a measure of depressiveness.

Results

Factor structure

We used a DWLS/WLSMV based confirmatory factor analysis (Rosseel, 2012) to test three latent EMQ-R models: 1) three correlated factors (Retrieval + Attentional Tracking + two additional items as a separate factor), 2) one factor, and 3) a bifactor model, with one general (memory disturbance) factor, comprised of all the EMQ-R items, in addition to domain-specific Retrieval and Attentional Tracking factors (two unassigned items were put to the general factor).

Bifactor model had the best fit (Hooper, Coughlan, & Mullen, 2008): $\chi^2(54) = 150.61$, $p < .001$; CFI = .990, TLI = .985, RMSEA = .060, 90% CI [.048, .071], followed by the three-factor model: $\chi^2(62) = 355.27$, $p < .001$; CFI = .968, TLI = .960, RMSEA = .097, 90% CI [.087, .107], and a one-factor model: $\chi^2(65) = 470.16$, $p < .001$; CFI = .956, TLI = .947, RMSEA = .111, 90% CI [.102, .121].

In a bifactor model, general factor explains 88.16% of the variance. General factor's internal consistency (Zinbarg, Revelle, Yovel, & Li, 2005) is good: α = .94, ω = .88, and similar to the one-factor model values: α ≈ ω ≈ .91. Factor loadings are generally high in both models (Λs > .50).

In a three-factor model, factors are very highly correlated: .89, .88, and .98, respectively. Factor scores of the bifactor's general factor, factor scores of a one-factor model, and a total scale summary scores are all highly correlated: .98, .96, and .97, respectively. Due to all of this, we opted to use the EMQ-R total scale summary score in all subsequent analyses.

Mean summary scores are roughly equal for males ($M = 0.98$, $SD = 0.67$) and females ($M = 0.87$, $SD = 0.73$): $t(502) = -1.76$, $d = 0.16$, $p = .078$. Differences between younger and older participants were not considered, due to a small number of older participants (81.2% were ≤ 35 years old).

Convergent, divergent, and predictive validity

The Big 5 traits explain 17.14% of the EMQ-R's variance. Significant predictors (all ps < .001) are: lower Conscientiousness (β = -.28; r = -.37) and higher Neuroticism (β = .17; r = .28). The EMQ-R significantly ($p_\Delta < .001$) predicts depressiveness scores (β = .31; r = .38, $p < .001$) above the Big 5 traits, explaining an additional 7.80% of the depressiveness' variance over the starting 35.32% accounted for by the Big 5 (Table 1). Note that specific EMQ-R factors (from a bifactor model) do not incrementally predict depressiveness scores ($R^2_\Delta = .003$, $p_\Delta = .303$) above the Big 5 traits and a general EMQ-R factor.

Table 1: Prediction of depressiveness.

Predictors	β_1/ β_2
Big 5 traits	
Neuroticism*	.278/.264
Extraversion*	.361/.339
Agreeableness	.422/.397
Conscientiousness*	.378/.367
Openness to Experience*	.370/.348
EMQ-R total score*	NA/.279

Notes: β_1/ β_2 are standardized regression correlations from step 1 (Big 5 predicts depressiveness) and step 2 (Big 5 + EMQ-R total score predict depressiveness), respectively. Significant predictors are marked with * (significant predictors from step 1 remained significant in step 2).

Discussion

The results show that the EMQ-R has good psychometric properties (i.e., fit and internal consistency) on a general Bosnian/Serbian sample. However, instead of a three-factor structure, we determined that a bifactors solution fits the data best. This solution assumes a general (memory failure) factor (which accounts for the vast majority of the variance), in addition to domain-specific (Retrieval and Attentional Tracking) factors. If three factors are extracted, they are correlated much more strongly than previously reported (Royle & Lincoln, 2008). Combined with the fact that a total score has good internal consistency, and that specific factors are not predictive over the general factor, we suggest that, at least for the general sample, a simple total summary score is the most appropriate operationalization of the EMQ-R.

The EMQ-R's correlations with other constructs are in line with the expectations. The total score is related to higher Neuroticism and lower Conscientiousness (which suggests convergent validity), but not to other Big 5 personality traits (which suggests divergent validity) (Klaming et al., 2017; Rönnlund et al., 2011). It also correlates with depressiveness (Bruce & Arnett, 2004), and even predicts it over and beyond the Big 5 traits (which suggests predictive validity).

In conclusion, we recommend the use the EMQ-R's translation on Bosnian/Serbian general (i.e., non-clinical) samples. We suggest that a total score should be used, but the EMQ-R should also be validated on relevant clinical samples, on which this might not be an appropriate scoring.

Acknowledgements

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The effect of stimulus onset asynchrony between different response cues on reasoning in a base rate task

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Abstract

Recent theories of dual processing propose the existence of multiple Type 1 processes which cue responses during reasoning. If these responses do not point towards the same answer then that conflict may be detected. If the conflict is detected, Type 2 processing is initiated to resolve it. This study is concerned with the timeline and relative strength of different Type 1 processes in a modified base rate task. The task can cue congruent (stereotype and probability point towards the same answer) or incongruent responses. We varied the SOA (stimulus onset asynchrony) time between the stereotype inducing and base rate information. The study was a 2 (congruence) × 3 (SOA: 200, 800, 1400ms) experimental design. The analysis of the total data set showed a significant congruence effect regardless of SOA for both response times and confidence. Additionally, an analysis of stereotypical and base rate responses was conducted for each level of SOA. Results showed a marginal response type by SOA interaction effect. Response times decreased for the base rate and increased for stereotypical responses as SOA increased. The same effect was not found for confidence ratings. The results imply responses cued by the stereotype information decreased in strength as SOA increased. This effect may lead to a conclusion that Type 1 process strength decays over time.

Keywords: dual processing; reasoning; meta-reasoning; base rate task; stimulus onset asynchrony

Introduction

Recent models of thinking and reasoning within the broad dual-process approach have proposed the existence of multiple Type 1 processes (DeNeys, 2014; Pennycook, Fugelsang, & Koehler, 2015). These models suggest that typical reasoning tasks cue multiple responses which are based on the rapid processing. Some of these processes may rely on cognitive heuristics, while others may be based on processing which leads to responses traditionally attributed to analytical thinking. When these multiple Type 1 processes provide incongruent responses a conflict may be detected. Type 2 processing is then activated in order to resolve the induced conflict. The relative differences in strength of the initial Type 1 processes is a key assumption, necessary in order to explain why normatively incorrect responses are still chosen in a large percentage of situations even if the conflict is detected.

Bago and DeNeys (2017) have expanded the idea of differential strength to include a function of strength. They hypothesise Type 1 processes (and their outputs) do not have a stable strength and thus a stable impact on the final reasoning decision. Instead, they propose that strength as a function of time has an inverted U shape, with a rise to peak strength and then a decay. A hypothetical situation is shown in Figure 1. In this hypothesised situation, two Type 1 processes cue initial responses (I_1, I_2). Suppose that I_1 corresponds to a cognitive bias, it is initiated a fraction earlier than I_2 which is based on, for example, probabilistic reasoning. If the final response is given at the T_1 point in time, then the first initial response should be dominant, however, if the response is made at T_2 the opposite should be true. This, of course, is a hypothesised situation. In reality, it is not clear whether strength functions would have this shape, and how the functions would differ between different Type 1 processes.
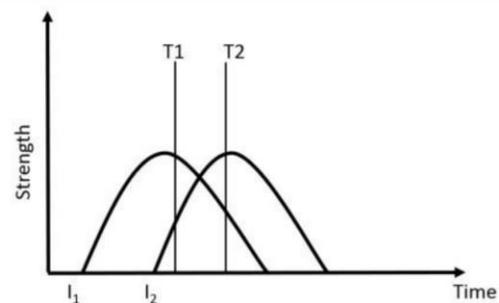
Figure 1: Hypothesised strength of responses (I_1, I_2) based on initial Type 1 processing over time (Bago & DeNeys, 2017)

Typical reasoning tasks are of particular use when it comes to inducing conflict and cueing different types of responses. The base rate neglect task has been used in psychological research for over four decades and has evolved several times during that period (Kahneman & Tversky, 1973; DeNeys & Glumicic, 2008; Dujmović & Valerjev, 2018). A streamlined version of the task presents the participant with a rather simple problem as in the example below.

Person A is physically strong.

Person A is chosen at random from a group of 997 teachers and 3 professional boxers.

Is Person A more likely to be a teacher or a boxer?

Most participants respond by answering that it is more likely for person A to be a boxer. This answer is incongruent with the base rate information for this group which heavily favours the alternative response. Research on this task has shown participants are sensitive to conflict even when choosing the stereotypical response (Dujmović & Valerjev, 2018). This task may also be appropriate to test the hypothesised peak and decay of strength proposed by Bago and DeNeys (2017). By utilising stimulus onset asynchrony (SOA) between the stereotype inducing and base rate information there may be a way of manipulating the relative strength of the two processes (responses) at the time the participants make their final decisions. By extending the time between the presentation of stereotype inducing and base rate information we expected to increase the relative strength of the base rate information (the participants would make their decision at a time similar to T_2 in Figure 1).

The aim of this study was to manipulate the relative strength of cues for different responses in a base rate neglect task by introducing SOA between the stereotype inducing and base rate information and determine the impact of this manipulation on reasoning and metacognitive judgments of confidence.

Method

A total of 62 undergraduate psychology students participated in the study. The experiment was a 2 (congruence) × 3 (SOA) repeated measures design. Base rates and stereotypes could be congruent or incongruent and the time difference between the presentation of stereotype inducing information and base rate information had three possible values (200, 800, 1400 ms). The single trial procedure can be seen in Figure 2.
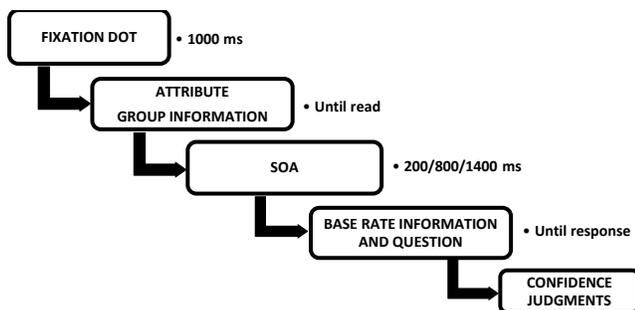
Figure 2: Single-trial procedure for the experiment

The experiment was designed and conducted using the E-Prime software package. There were 48 trials in total, eight per experimental condition. Since half of the trials were congruent and half were incongruent it was counter-balanced so that congruent trials for half of the participants appeared as incongruent for the other half.

Results

Total date-set analysis

Outlier responses which had response times outside the +/-3 standard deviation range were removed from the total data-set before the analysis. These extreme responses made up 2.02% of the total number of responses.

The final results were formed by calculating mean response times and confidence ratings as well as the percentage of responses which were congruent with the base rate probability for each participant.

Three 2×3 repeated measures ANOVAs were conducted in order to determine the impact of SOA between the stereotype inducing and base rate information on reasoning performance and metacognitive judgments. For all three variables, only the main effect of congruence proved to be statistically significant. Participants chose the base rate response more often in the congruent compared to incongruent conditions ($F(1,61) = 78.73$, $p < .01$, $\eta_p^2 = .56$). Responses were faster in the congruent compared to incongruent trials ($F(1,61) = 54.99$, $p < .01$, $\eta_p^2 = .47$). Finally, participants were significantly more confident in the congruent trials ($F(1,61) = 64.99$, $p < .01$, $\eta_p^2 = .52$).

Stereotype vs Base rate responses

A further analysis was conducted to determine whether the SOA had an impact on differences between stereotype and base rate responses in incongruent trials. Analyses of variance were conducted for response times and confidence judgments. A marginal response type by SOA interaction effect was found for response times ($F(1,52) = 3.10$, $p = .053$, $\eta_p^2 = .11$). This interaction is shown in Figure 3. Participants became slower when responding according to stereotype inducing information for longer SOA times while they became faster when responding according to the base rate information. The same interaction effect was not found for confidence judgments.
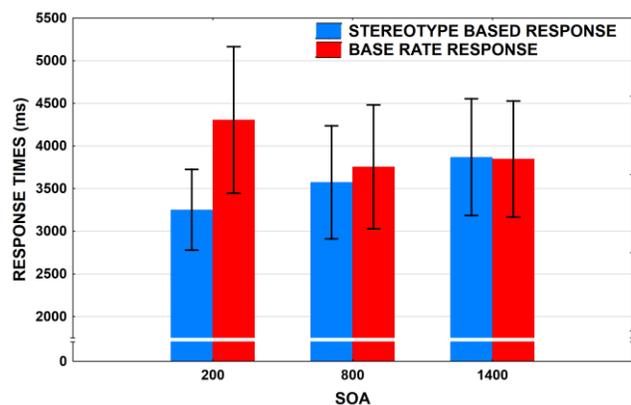
Figure 3: Response times for incongruent trials as a function of response type and SOA

Discussion

The goal of this study was to determine the impact of SOA between stereotype inducing and base rate information on reasoning and metacognition in a base rate neglect task. The analysis of the total data set showed SOA had no influence on response times, confidence judgments or the number of base rate responses. This indicates that SOA does not induce decay of stereotype inducing information in working memory (the number of base rate responses does not increase with SOA). This is an important result in light of the main analysis of incongruent trials only. This analysis was conducted in order to compare stereotype and base rate responses when conflict is present. A marginal interaction effect showed base rate responses were slowest for the shortest, and fastest for the longest SOA. The stereotype responses showed the opposite pattern. It seems the strength of stereotype inducing information decayed over time, and that this decay is not easily attributed to decay in working memory.

This result and interpretation have to be considered with extreme caution. There is a question of how the variability in reading time of the stereotype inducing information impacts reasoning performance. Furthermore, the effect seems to be quite subtle, impacting only response times and shown only as a marginally significant interaction. Replication of the result with tighter experimental control is necessary. Additionally, the opposite pattern of cueing would also be interesting. Showing base rate information and then introducing SOA before showing stereotype inducing information to produce the same effect for base rate responses would provide corroborating evidence for the hypothesised strength functions.

Acknowledgements

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Evaluation of a pilot implementation of diversion orders in Serbia

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Abstract

The criminal sanctions for juveniles who committed criminal offences often have negative psychological effects on their development, while, on the other hand, they have little influence on changing behavior in a pro-social direction. The goal of this study was the evaluation of the effects of diversion measures, on the integration and behavior of juveniles in Serbia, as an alternative to criminal sanctions. The analyses included characteristics of children and their families; their attitudes toward the offence and the effects of implementation of diversion orders on children's behavior. The study used a qualitative research method based on interviews with children and their parents and the self-report scale for the assessment of the effects of diversion. The sample included 121 children aged 14-18 years (88.4% males) and 80 of their parents. The study was conducted in Belgrade, Novi Sad, Niš and Kragujevac, during 2015 and 2016. The interviews were conducted by independent trained researchers 3-6 months after diversion orders. The results showed that 76.86% of adolescents had no serious behavioral problems and only 15.66% of them come from conflicted families. The results showed an absence of recidivism in the period of 6 months after diversion order and behavioral improvements in the ability to predict consequences, taking responsibility, and relationships with parents, conflict solving skills, etc. The results generally confirmed the positive effects of diversion measures which reduce the risk of expanding problems in behavior and repeating of criminal offences but also addressing the directions for improvements their application in future.

Keywords: diversion orders, evaluation of outcomes, juvenile offenders

Exposing children, who have committed a criminal offense, to criminal proceedings and sanctions can have negative effects on their further development, whereas they have little influence on changes in their behavior in a pro-social direction (Vito Maahs & Holmes, 2007; Zehr, 2002). The UN Convention on child rights recognizes the need that children should have special treatment in the judicial system and encourage measures, which will –whenever possible and preferable - avoid judicial processes (UNICEF, 2004a). According to this, a concept of diversion measures has been developed, as an alternative to criminal sanctions, aiming to support the inclusion of juveniles into the community and to prevent further delinquent behavior (UNICEF, 2004b, 2004c, 2004d). In Serbia, diversion orders have been introduced by the Law on Juvenile Offenders of Criminal Offences and Judicial Protection of Juvenile (2005), but have rarely been implemented. Support for their implementation generally came just from the projects with a limited time scope (Vlaović-Vasiljević & Džamonja, 2012; Džamonja, 2016). The goals of this study were to analyze the behavior of children who were referred to diversion orders, their attitudes toward the offence, characteristics of their families and the effects of implementation of diversion orders on children's behavior and family relations.

Method

The research method was based on in-depth semi-structured interviews with children and their parents. The parents filled out a 4-point scale with 32 items for the assessment of the effects of diversion measures. The sample included 121 children aged 14 to 18 years (M=16. 93, SD=1.43). There were 107 males (88.4%). Also, 85 parents were interviewed. The study was conducted in four cities in Serbia: Belgrade, Novi Sad, Nis and Kragujevac, 3-6 months (M=4.4) after fulfilment of diversion orders by independent trained evaluators who were postgraduate students of social work. Content analysis was applied to the transcripts of the interviews according to the main topics.

Results

The qualitative analysis of answers about behavior and usual activities of the young offenders showed three different groups. In most cases (76.86%), they were adolescents who attend school regularly and successfully, associated with pro-social peers, without behavioral problems, etc. Parents sometimes described them as naive, under the influence of peers, imprudent, rebellious, hard-headed, wishing to show off, etc., which is typical for this developmental phase. Only 8.26%, were adolescents with behavioral problems such as aggressiveness, impulsivity, conflicts, etc. The third group consists of adolescents who had difficulties in social integration, with a poor success at school, lack of specific interest or structured free time (7.43%). They are characterized more by "absence of strength", than by the presence of risk factors.

  Engaging in criminal offenses was predominantly a set of situational circumstances to which a majority of children are potentially exposed: peer influence, "experimenting" with new experiences or nonsense jokes without thinking of consequences, conflicts with peers, possession of marijuana, i.e., the behaviors characteristic for this age, and mostly end up without involvement of the police. Attitudes toward the offense and one's own responsibility vary from accepting responsibility and feelings of shame and regret to denying the significance of the act and, seldom, to deny being involved in the situation. Critical distance toward behavior and acceptance of responsibility leads to accepting the diversion order as an adequate and timely measure and an opportunity for "learning a lesson". Yet, approximately 15% of adolescents did not really accept responsibility, justifying the act as correct (*I have been attacked, I had to defend myself*), or minimizing the significance of the act (E*verybody smokes*

pot and they are not taken to court), Then, the diversion order was experienced as unnecessary and excessive, but it was accepted as the easiest way to avoid sanctions.

Adolescents' families in most cases consist of both parents (64.4%), while a third of the juveniles live with one parent only (35.6%). Most of the families perceived themselves as "*average*", where relationships between the parents are mostly harmonious and problems have been solved with joint efforts. A smaller number of families (15.66%) had permanent conflicts, poor communications or lack of contacts.

The majority of children (90.08%) and their parents (95.83%) perceived the diversion orders as a preventive intervention which lowers the risk of aggravating behavioral problems and criminal offences. They perceived the quality of cooperation with service providers as the key component of change. The perception of acceptance, respect, trust, openness, encouragement and understanding contribute to the positive effects on the behavior and attitudes of the juveniles. Only a small number of them (6.61%) considered the diversion orders as unnecessary and waste of time.

In the period of 3-6 months after fulfilment of diversion orders, there were no relapses of criminal offences. The improvements were noticed in: anticipation of consequences of behavior (63.75%), responsibility, organization and time planning (41.25%), relationships with parents through building of trust and spending more time together (52.5%), communication skills and conflict resolution (45%), control of rage, self-respect, etc.

Discussion and conclusion

The diversion orders and activities which accompany their implementation have had many positive effects. Through the work with service providers, juveniles had the opportunity to gain better insight into their behavior and potential consequences, to develop motivation for change and to improve various skills and relationships with parents and peers.

Although the direct effects of diversion orders proceed from the very nature of the procedure and various related activities, we should not neglect the effect of facing the stressful situation (contact with the police, prosecutor and possible sentences), and related negative feelings - shame, fear or guilt. The diversion orders were perceived as giving a chance and the absence of relapse surely represents the greatest success of their application. In light of the fact that majority of those adolescents did not differ substantially from their peers, this "too good a success", could be partly a reflection of the fact that many of them had not been under the risk of repeating a criminal offence anyway. In those cases, the use of opportunity would be more appropriate. A short period of time in monitoring the effects should be taken into account as well.

On the other hand, information about the presence of risk factors of adolescent's behavior or poor family relationships is especially important for individual planning of the focus, scope and intensity of the intervention. Therefore, it is necessary to improve the procedure for the evaluation of needs, strengths, and risks of adolescents and to individualize the approach to answer their specific needs and risks. It is important to reduce interventions where they are not necessary and focus professional resources on cases that need much more intensive work.

In future studies, it would be useful to analyze the specific connection of an adolescent's and family's characteristics with the differing effects of the programs and to control other factors which may influence the outcomes of diversion orders. In spite of methodological limitations, the results confirmed the positive outcomes of diversion orders, but they also indicated the necessity for their further improvement, so that the application of appropriate activities, with a collaborative and individually tailored approach, can become fully effective.

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Concordance between different Informants in assessing Aggressive and Withdrawal Behaviour of the Young in a Correctional Institution

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Abstract

Conclusions about the psychological phenomena and interconnections between them were frequently based on the assessment by one type of informants whose predictability could be dubious. The aim of the study is to determine the degree to which the assessment of aggressive and withdrawal behaviour by one type of informants is predictive for the assessment of the same or related behaviour by other types of informants with different instruments. Variables were aggressive and withdrawal behaviour of the inmates, their victimization and rejection by the peers. The sample included three groups of subjects-informants: 98 adolescent inmates of the Juvenile Correctional Institution in Krusevac – JCIK, Serbia, their 108 peers and 13 tutors in JCIK. The instruments were: Personal Aggression Questionnaire (Hrncic, 2002) for self-assessment of aggression, Peers' Aggression Questionnaire (Hrncic, 2002) for self-assessment of victimization, TRQ for a rating of aggression, victimization and withdrawal by tutors and sociometry for disliking and withdrawal. Linear regression showed a significant positive joint variance between the same or related phenomena assessed by different types of raters that was between 5.0% and 11.5%. The results showed a relatively high level of subjectivity in the assessment process. The type of informant was of utmost importance for drawing conclusions about the psychological phenomena.

Keywords: interrater concordance; self-assessment; tutors' assessment; peers' assessment; antisocial behaviour.

Introduction

Conclusions about psychological phenomena frequently rely on the assessment by one type of informant. Researches of interrater concordance have been showing low correlations between raters in the assessment of the same or similar phenomena. Higher concordance was found in the assessment of phenomena with clear behavioural indicators than in assessment of internal states. Meta-analysis of 51000 studies using different informants found that mean cross-informant correlations between self-reports and informant reports obtained with parallel instruments were .681 for substance use, .428 for internalizing, and .438 for externalizing problems and .304 when different instruments were used (Achenbach, Krukowski, Dumenci, & Ivanova, 2005). Inter-informant correlation of the same phenomena could be lower than the correlation between of different phenomena assessed by the same rater due to common method variance that could be 30.5% (Podsakoff, McKenzie, Lee, & Podsakoff, 2003:879).

Researches based on the point of view of one type of informant could be affected by subjectivity and thus undermine obtained results. As researches of cross-informant agreement in Serbia have been underrepresented the objective of this research was the concordance between different informants in the assessments of the same or related phenomena by different instruments on Serbian sample. The aim is to determine the degree to which the assessment of aggressive and withdrawal behaviour by one type of informants is predicted by the assessment of the same or positively related behaviour by other types of informants assessed by different instruments. It was hypothesized that: 1) assessment of aggressiveness, victimization and withdrawal will have significant predictivity for the assessment of the same phenomena by different raters assessed by different instruments, 2) stronger power in predicting one phenomenon will have rating of the positively related phenomena by the same rater, than the rating of the same phenomena by different raters assessed by different instruments, 3) stronger power in predicting the self-assessed peers' victimization will have positively related phenomena in peer group (peers' rejection) assessed by the more relevant rater (peers) than the same phenomena assessed by the less relevant raters (tutors).

Method

Aggression, victimization and withdrawal were assessed by two out of three types of informants: tutors, peers and self. Peers' rejection was assessed by peers. As many researchers found positive connections between victimization, withdrawal and peers' rejection (Dill, Vernberg, Fonagy, Twemlow, & Gamm, 2004, Kollerova & Smolik, 2016), they were considered as positively related.

The sample consisted of three groups of informants: 95 male adolescent inmates of the Juvenile Correctional Institution in Krusevac – JCIK, Serbia aged from 14 to 21 ($M = 18.61$; $SD = 1.60$), their 108 male peers and their 13 tutors in JCIK (11 males and 2 females).

Research instruments included four questionnaires. Three questionnaires had Likert's type five-grades answering scale: Personal Aggression Questionnaire – AQ (Hrncic, 2002) for self-assessment of aggression (14 items, $\alpha = .92$), Peers' Aggression Questionnaire VQ (Hrncic, 2002) for self-assessment of victimization (19 items, $\alpha = .92$) and Tutors Rating Questionnaire – TRQ, based on researches of Crick and Bigbee (1998), with three scales that measure

aggression (TRQ–A, 6 items, α =.87), victimization (TRQ–V, 6 items, α = .87) and withdrawal (TRQ–W, 3 items, α = .80). Sociometry questionnaire – SMQ included two open items: to name the peers that they most dislike (SMQ–R) as a measure of a rejection and to name the peers that most frequently stand alone and separated from others (SMQ–W) as a measure of a withdrawal.

The procedure included research in JCIK. Juveniles were asked to anonymously complete AQ and PVQ under the supervision of the researcher. A few days later, inmates from 12 groups were gathered and asked to anonymously complete SMQ for the peers in their educational group, consisted of 8–17 inmates under the supervision of an appointed tutor. Tutors were asked to complete TRQ for the adolescents they are tutoring.

Research data were standardized, scores on TRQ were calculated as principal component score and Pierson correlation coefficient, linear and multiple regressions were applied.

Results

Significant positive correlations were found between the same or related phenomena rated by different informants: tutors' and self-assessment of aggression, peers' and tutors' assessment of withdrawal and of victimization/rejection (Table 1). Anyhow, the strongest were correlations between the assessment of positively related phenomena – victimization/rejection and withdrawal by the same rater.

Linear regression showed that the tutors' rating of aggressive behaviour was significantly but weakly predictive for self-assessment of the same behaviour (Table 2). Similar predictivity was of the peers' rating of withdrawal for the tutors' rating of withdrawal. The strongest predictivity was between the related phenomena rated by same informant: peers' rating of rejection and withdrawal as well as tutors' rating of victimization and withdrawal (Table 2).

Stepwise multiple regression showed that, after peers' rejection was entered into the formula, tutors' rating of victimization didn't significantly contribute to the prediction of self-assessment of victimization and that the two variables together explained slightly more variance (12.5%) than peers' rejection alone (Table 3). After tutors' rating entered, peers' rejection still significantly contributed to the model. The results suggest that peers' rejection is more valid for self-assessed peers' victimisation than tutors rating of victimization.

Table 1: Pearson Correlation Coefficient

	VQ	TRQ–A	TRQ–V	TRQ–W	SMQ–R	SMQ–W
AQ	.069	.219[*]	-.142	-.261[*]	.066	.040
VQ	/	-.108	.286[**]	.059	..340[**]	.181
TRQ-A		/	.198	-.112	.158	-.106
TRQ-V			/	.451[**]	.380[**]	.346[**]
TRQ-W				/	.140	.233[*]
SMQ-R						.492[**]

[#] $p < .05$. [*] $p < .01$ [**] $p < .001$.

Table 2: Linear regression

Phenomena	Predictor	Criteria	R^2	B	t	p
Aggressiveness	TRQA	AQ	.053	.216	2.253	<.05
Withdrawal	CSM–W	TRQ–W	.052	.278	2.138	<.05
Victimization	TRQ–V	PVQ	.050	.276	2.194	<.05
Peers rating	SMQ–R	SMQ–W	.242	.492	5.355	<.001
Tutors rating	TRQ–V	TRQ–W	.204	.451	4.770	<.001

Table 3: Hierarchical multiple regression, criterion PVQ score

Step	Predictor	Cumul. R^2	Delta R^2	B	F change (df)	p
1st	SMQ–R	.112	.112	. 428	11.077 (1,88)	<.001
2nd	TRQ–V	.126	.074	. 154	6.265 (2,87)	>.10
1st	TRQ–V	.052	.052	. 278	4.836 (1,88)	<.05
2nd	SMQ–R	.126	.074	. 371	6.265 (2,87)	<.01

Discussion

All three hypotheses were confirmed. Significant but weak predictivity of the assessment of the same phenomena by different raters and instruments was confirmed. Our findings showed lower correlations in comparing with the mean of correlations between assessments of the same phenomena by different informants when different instruments were used, found in the meta-analysis of Achenbach et al. (2005). The result that the connections between the assessments of the related behaviours by the same raters were stronger than the connections between the assessments of the same behaviours by different raters suggested salient common method variance and relatively high level of subjectivity in the assessment process. Finding that victimization in the peer group is better predicted by related phenomena in peer group if assessed by peers than by the same phenomena if assessed by tutors suggested the utmost importance of the relevance of informants.

Given discrepancies could be signs of epistemological crisis or a challenge to use them for the better understanding of the phenomena (De Los Reyes, Thomas, Goodman & Kundey, 2012). Using multiple informants could be a solution (Achenbach et al., 2005) while effective approaches in using differences between their assessment is a matter of discussion between researches (De Los Reyes et al., 2013).

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The preliminary results on factorial validity of the Maximization scale

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Abstract

The Maximization Scale is one of the most widely used instruments for assessing the tendency to maximize versus to satisfice in decision making. As the Maximization scale has not been previously tested in Serbia, in this study we aimed to assess its factorial validity, along with the validity of one of its short forms – the Short Form Maximization Scale. The sample of 189 psychology students completed the scale and the data were analyzed using confirmatory factor analysis. We tested a total of four theory-driven models and the best fit was obtained for the three-factor model on the short form of the scale. The three factors – high standards, alternative search and decision difficulty were moderately positively correlated. Our results support previous research favoring the short form of the scale due to its improved psychometric properties. Our data also indicate that maximization is not an entirely unitary construct but rather a composite of several related aspects of maximizing/satisficing.

Keywords: Maximization scale, factorial validity, CFA

Introduction

The Maximization Scale (Schwartz et al., 2002) is an instrument for measuring individual differences in decision making, conceptualized as a general behavioral tendency to maximize or satisfice when making a choice. The concept of maximization is based on Simon's work related to his criticism of the rational choice theory: Simon's assumption was that, due to their limited abilities to process information, people could not make the best possible choice, but rather chose an option that was good enough to satisfy their goals, i.e. instead of maximizing they were satisficing (Simon, 1955, 1956).

Following Simon's work, Schwartz and colleagues (2002) proposed a differentiation of individuals according to their goals when making decisions. While some people try to choose the best option (maximizers), others try to choose the option which is good enough (satisfiers). Actually, the maximizing tendencies form a continuous variable, but the authors usually refer to maximizers and satisficers for the ease of discussion (Cheek & Schwartz, 2016).

The original Maximization scale contains 13 items, but after being used in numerous studies, the authors came up with the shortened 6-item version with improved psychometric properties (Nenkov et al., 2006). The items are reported to represent 3 dimensions: high standards (HS, e.g. *I never settle for second best*), alternative search (AS, e.g. *No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities*), and decision difficulty (DD, e.g. *I often find it difficult to shop for a gift for a friend*). Both scales have been widely used, but soon after their factorial structure had been tested a number of different authors proposed their own scales for measuring maximization. The content of these scales varies substantially and is often far beyond the original definition of the construct (Cheek & Schwartz, 2016). Since neither has been used in the Serbian language, we decided to start with evaluating the original scale and its shortened version.

Method

Participants and procedure

A total of 189 students of Psychology at the University of Belgrade (83% females) took part in the study. Participant mean age was $M = 22.3$, $SD = 2.5$. Participants completed the questionnaire in a laboratory setting. Study participation was voluntary and all participants provided their informed consent.

Instruments

The Maximization Scale (MS, Schwartz et al., 2002) is a 13-item instrument for assessing the tendency to maximize in decision making. Items are rated on a 7-point Likert scale ranging from 1 – Completely disagree to 7 – Completely agree. Apart from the total score, it is also possible to calculate scores for the three subdimensions of maximizing, i.e. high standards (3 items), alternative search (6 items) and decision difficulty (4 items).

Six items of the original MS constitute the Short Form Maximization Scale (MS–S, Nenkov et al., 2008) with two items per each subdimension (HS, AS and DD).

Results

In order to assess the factorial validity of both the original and the short form of the MS, we employed a series of confirmatory factor analyses. Namely, using the Maximum Likelihood estimation method we tested the one- and three-

factor models on both the whole 13–item scale (Models 1a and 2a) and the shortened 6-item version (Models 1b and 2b). In the three-factor models, the factors were allowed to correlate freely. The fit of the models can be seen in Table 1. Favorable models are generally indicated by χ^2/df ratio below 2.5, CFI above .90, RMSEA below .08 and lower AIC.

Table 1: Fit indices for tested CFA models.

Tested model	χ^2 (df)	χ^2/df	CFI	RMSEA	AIC
Model 1a (1 factor)	196.09 (65) ***	3.02	.72	.10	248.09
Model 2a (3 factors)	139.00 (62) ***	2.24	.84	.08	197.00
Model 1b (1 factor)	40.99 (9) ***	4.55	.76	.14	64.99
Model 2b (3 factors)	13.98 (6) *	2.33	.94	.08	43.98

The fit of both one-factor models (Models 1a and 1b) was rather poor, while the three-factor model on the whole scale (Model 2a) was somewhat better, but still below the recommended fit values. However, the fit of the three-factor model on the shortened version (Model 2b) was quite good, so we proceeded with inspecting item loadings on their respective factors. Factor loadings for AS and DD were moderate to high and similar in magnitude, while one of the HS standardized loadings exceeded the value of 1, while the other was below .35. A model respecification which constrained the unstandardized AS item loadings to be equal significantly reduced the model fit ($\Delta\chi^2$ (1) = 16.32, $p < .001$) so we decided to stay with Model 2b. Item loadings and factor correlations for this model can be found in Table 2. The three maximization subdimensions were moderately positively correlated.

Table 2: Item loadings and factor correlations for CFA Model 2b.

Loadings	AS	DD	HS
item1	.57		
item2	.57		
item5		.48	
item6		.75	
item10			1.08
item13			.36
Correlations			
DD	.52		
HS	.33	.51	

Discussion and conclusion

Our results are in line with those of Nenkov et al. (2006), supporting the recommendation to use the shortened rather than the original version of the Maximization scale. Even though the two items of the high standards subdimension showed unbalanced loadings on the corresponding factor, the fit of this model was much better than the fit of the structurally equivalent model on the full scale. In addition, our results show that the shortened version of the scale measures three relatively highly correlated aspects of decision making, namely high standards, alternative search and decision difficulty.

Future research should compare the MS and MS-S with some of the more recent versions of maximization scales since Cheek and Schwartz himself suggested that some of them fit the theoretical model even better (Cheek and Schwartz, 2016). Their additional considerations of the meaning of maximization indicated that decision difficulty should be considered an outcome or cause of maximization rather than its component, while high standards and alternative search clearly correspond to decision goal and decision strategy, respectively, constituting key components of the maximization process.

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Short Psychopathy Rating Scale (SPRS): Preliminary validation results

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Abstract

The goal of the present research was to construct a short, reliable and valid scale for the rating assessment of psychopathy. By using existing models of psychopathy we constructed Short Psychopathy Rating Scale which measures three psychopathy traits: 1) Deceitfulness – lying and conning followed by high self-esteem (5 items); 2) Emotional coldness – lack of emotional empathy, guilt and general affective shallowness (3 items); 3) Recklessness – impulsivity, irresponsibility, elevated risk proneness (5 items). The research was conducted on 521 individuals (34% males) who rated their parents on psychopathy markers. They provided the measures of family dysfunctions, economic poverty in the family and the estimations of their own mental health. Obtained results showed that fit indices, especially GFI, CFI and RMSEA, were satisfactory both for fathers (χ^2 = 105.53; p < .01; GFI = .99; CFI = .97; RMSEA = .05) and mothers ratings (χ^2 = 132.42; p < .01; GFI = .99; CFI = .98; RMSEA = .06); however, the items loadings showed that one item both in females and in males have inadequate factor loading. Reliability estimates were high for Deceitfulness and Recklessness (αs > .80) with lower estimates for Emotional coldness (α = .57 for mothers and α = .63 for fathers). Paired samples t-test showed that males were higher on all psychopathy traits than females. Finally, correlation analysis showed that psychopathy traits in parents were negatively correlated with mental health in children and positively associated with the dysfunctional parental behavior towards children and family economic poverty. Preliminary empirical evidence suggests support for Short Psychopathy Rating Scale, a new instrument which could advance the measurement of psychopathy in various research settings.

Keywords: psychopathy; rating method; psychometrics; sex differences; validity

Introduction

Psychopathy and its assessment

Psychopathy represents a set of traits which is usually depicted by manipulative and deceitful behavior, lack of empathy and fear and impulsive and irresponsible behavior (Patrick, Fowles, & Krueger, 2009). The content of psychopathy still represents a dispute among the researchers. For example, some researchers think that antisocial behavior is one of the central features of psychopathy (Hare, 2003), while others believe that this behavior represents a correlate or a behavioral consequence of psychopathy (e.g. Cooke, Michie, & Skeem, 2007; Međedović, Petrović, Kujačić, Želeskov Đorić, & Savić, 2015). Nevertheless, psychopathy is thought to be a crucial personality disposition which drives an individual to immoral, antisocial and repeatable criminal behavior (Međedović, 2015). This is why it is a frequent topic in empirical research and important aspect of psychological practice as well, especially in penal and forensic contexts.

Since there is a great interest in psychopathy both in the scientific and psychological community in general, researchers developed several protocols for the measurement of psychopathy. Most of them use self-report methodology: a participant describes his/her own psychopathy characteristics on items constructed to measure this set of traits. Some of the prominent models for measuring psychopathy are Self Report Psychopathy scale (SRP 4: Paulhus, Neumann, Hare, 2016); Psychopathic Personality Inventory (Lilienfeld & Andrews, 1996), Levenson Self Report Psychopathy scale (LSRP: Levenson, Kiehl, & Fitzpatrick, 1995), Triarchic Personality Measure (TriPM: Patrick et al., 2009) and Psychopathic Personality Traits Scale (PPTS: Boduszek, Debowska, Dhingra, & DeLisi, 2016).

However, there is only one instrument which is based on a rating assessment of psychopathy: Psychopathy Check List-Revised and its derivates (PCL–R: Hare, 2003). This protocol is one of the most frequently used measures of psychopathy and it is often considered as a "gold standard" for the psychopathy assessment. However, despite its many strong points, this instrument has several limitations which limit its usage in the research context: 1) the protocol depends on external information about the rated person, so it is applicable only in institutional settings; 2) the assessment is time-consuming – over 1 hour per participant; 3) the rater must be skilled professional; 4) it cannot be administrated to a group of participants - the rater can work with only one participant per administration, etc.

Goals of the present research

Rating measures of personality traits are widely used in the individual differences research and they have high heuristic value. The same stands for psychopathy; furthermore, rating protocols can diminish one of the methodological constraints which are frequently attributed to the self-report measures of psychopathy: socially desirable responding (Međedović, 2015). However, for reasons described previously, PCL–R is often incompatible for administration in the long surveys and time-consuming research. This is why we tried to develop a new rating measure of psychopathy which would be short but valid and reliable at the same time. Furthermore, similarly to other rating scales in the field of personality research, the rater would not have to be skilful professional, but a person who knows the target individual relatively good (e.g. family

member, friend, mate, teacher, etc.) In the rest of this report, we described the development of the new psychopathy measure which we labeled as Short Psychopathy Rating Scale. Furthermore, we explored and presented the psychometric properties of the scale and its subscales: their latent structure and reliabilities measured by internal consistency. Since there are robust and reliable sex differences in psychopathy, with males having higher scores (Cale & Lilienfeld, 2002), we explored these differences as well. Finally, we showed initial data of external validity of the scales by presenting their correlations with criteria measures.

Method

Sample and procedure

The research sample was composed of 521 individuals (34% males; M_{age} = 29.41; SD = 10.38) who rated their parents on psychopathy markers. Mean age of fathers was 55.6 years (SD = 9.65) while the mean age of mothers was 50.11 years (SD = 5.99). Furthermore, the participants provided some data regarding themselves, which we included as the criteria measures. Measures are collected via online study. Participants were included in the study on a voluntary basis and provided written consent. Participants were selected via social networks, most of them were students but a whole sample is a heterogeneous one and it can be classified as a convenient community sample.

Measures

Short Psychopathy Rating Scale (SPRP) was constructed by analyzing prominent models of psychopathy (Boduszek et al., 2016; Hare, 2003; Levenson et al., 1995; Lilienfeld & Andrews, 1996; Paulhus et al., 2016; Patrick et al., 2009) and extracting the common content which is present in all these models. In the exploration of these inventories, we found three common traits which should depict the core features of psychopathy: *Deceitfulness* (lying and conning followed by high self-esteem), *Emotional coldness* (lack of emotional empathy, guilt, and general affective shallowness) and *Recklessness* (impulsivity, irresponsibility, elevated risk proneness). We operationalized these scales using five, three and five items, respectively. We did not have reversely coded items since we did not want to conceal the object of measurement from our participants: this way we achieved the face validity of the scales (the items can be seen in Table 1). We used a five-point Likert scale for responding where 1 stands for "the characteristic is not present at all" while 5 stands for "the characteristic is present to a high extent".

Table 1: The latent structure of SPRS items

	Recklessness	Deceitfulness	Emotional coldness
Eigenvalues	5.30(6.26)	1.41(1.34)	1.13(1.05)
Percentages of explained variance	41(48)	11(10)	9(8)
She/he cares only about hers/his personal interest		.63(.47)	(.54)
She/he rarely expresses the feeling of guilt			.40(.62)
She/he lives a day by day, without extended plans	.68(.89)		
She/he has very high opinion about her/himself		.60(.52)	
She/he rarely feels compassion to others when they feel bad			.66(.63)
She/he is irresponsible person	.91(.88)		
She/he manipulates others		.92(.56)	
She/he is emotionally cold person		.42	.33(.62)
She/he is often late for meetings or with execution of a task	.76(.67)		
She/he uses charm in order to get what she/he wants		.62(.93)	
She/he lacks self-control	.36(.42)		
She/he uses lying in order to get what she/he wants		.48(.74)	
She/he enters in unnecessary risks	.55(.69)		

Notes: data for the ratings of mothers are provided in parentheses. Loadings bellow .30 are omitted.

Table 2: Descriptive statistics, reliabilities and sex differences in psychopathy traits

	Females			Males				
	M	SD	α	M	SD	α	t	d
Deceitfulness	1.85	0.84	.82	2.04	0.99	.86	3.70**	0.21
Emotional coldness	2.13	0.89	.59	2.35	0.97	.65	4.22**	0.24
Recklessness	1.69	0.69	.81	1.93	0.99	.85	5.19**	0.28

Notes: * – p < .01

We collected several additional measures which we used as criteria variables in the present study. The first one is *Mental health*: we asked participants to estimate their own mental health on a single item (the response scale ranged from 1 to 10 where 1 stands for "very poor" and 10 for "excellent"). The second one describes *Family dysfunctions* (*M* = 1.93; *SD* = 0.82; α = .82). The items for this scale (5 items) are extracted from the Low Socialization scale developed as a part of AMORAL 15 inventory (Knežević, 2003). It describes various dysfunctional relations in the family including maltreatment and neglect.

Finally, we administrated the measure of the economic *Poverty* in participants' families during their childhood. It is composed of four items (*M* = 2.42; *SD* = 0.94; α = .73). Both Family dysfunctions and Poverty have 5 point Likert-type response scales where 1 stands for "I disagree completely" while 5 stands for "I agree completely".

Results

Latent structure of SPRS items

First, we explored the latent structure of the SPRS items in order to analyze to what extent the latent structure corresponds to the expected three-factor solution. Maximum Likelihood Exploratory Factor Analysis is chosen as a method for factor extraction. The analysis is performed for males and females (i.e. fathers and mothers) separately. Fit indices, especially GFI, CFI and RMSEA, were satisfactory both for males and females: χ^2 = 105.53; p < .01; GFI = .99; CFI = .97; RMSEA = .05 for fathers and χ^2 = 132.42; p < .01; GFI = .99; CFI = .98; RMSEA = .06 for mothers. The loadings of the items on three latent factors are provided in Table 1 (the loadings for mothers are shown in parentheses).

It can be seen in Table 1 that the factor structure mostly corresponded to the one which is conceptually expected. However, there were two exceptions to this. The item "She/he is an emotionally cold person" had a higher loading on Deceitfulness factor than on Emotional coldness in the ratings of fathers. Furthermore, the item "She/he cares only about her/his personal interest" had a higher loading on the Emotional coldness than on Deceitfulness in the ratings of

mothers. However, it should be noted that both items did have secondary loadings on the factors they are intended to measure.

Descriptive statistics, reliabilities and sex differences

Next, we showed descriptive statistics, Cronbach's α coefficients and the differences between the males and females on three psychopathy traits. Since the participants are couples, we conducted paired-samples t-test for the exploration of sex differences. These data are shown in Table 2.

The reliabilities for Deceitfulness and Recklessness were quite high. However, alpha coefficients for Emotional coldness were lower, which is expected since this scale is composed of 3 items only (in fact, bearing in mind this fact, the reliabilities are not exceedingly low for this scale either). Males scored higher on all three scales: the highest difference was detected on Recklessness trait, followed by Emotional coldness and Deceitfulness. However, all detected effect sizes were small in magnitude.

Relations between psychopathy and the external criteria measures

Finally, we calculated correlations between the psychopathy measures, Family dysfunctions, Poverty and Mental health in offspring. Pearson's coefficient of linear correlation is used as the measure of bivariate association. The results of the correlation analysis are shown in Table 3.

The results of correlation analysis were unequivocal and congruent: psychopathy traits in parents are systematically positively related to Family dysfunctions and economic Poverty, while they have negative associations to Mental health in offspring. These associations are found in males and females as well. Recklessness showed the highest correlations with Family dysfunctions and Poverty; the associations with Mental health in offspring are approximately of the same magnitude. All detected effect sizes are low to medium.

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Table 3: The relations between psychopathy, family dysfunctions, poverty and mental health in offspring

	Family dysfunctions		Poverty		Mental health	
	Females	Males	Females	Males	Females	Males
Deceitfulness	.34**	.35**	.11**	.15**	-.21**	-.18**
Emotional coldness	.30**	.34**	.17**	.15**	-.18**	-.15**
Recklessness	.44**	.39**	.26**	.31**	-.20**	.18**

Notes: * – p < .01

Discussion

Psychometric characteristics of SPRS scales

The data obtained in the present research provided support for the newly developed Short Psychopathy Rating Scale. Obtained factor structure of the scale closely resembled the conceptually expected one. Only two items (one per fathers and mothers) had higher loadings on factors which they are not supposed to operationalize. Adequate factor loadings resulted in high fit indices for both models. Consequently, appropriate factor structure resulted in high reliabilities of the scales as well, all except Emotional coldness subscale. The scores on three psychopathy traits were more pronounced in males than in females which are congruent with existing empirical data on sex differences in psychopathy (Cale & Lilienfeld, 2002; Nicholls, Ogloff, & Douglas, 2004).

The results of the correlation analysis also suggested that SPRS represents a valid measure of psychopathy. Psychopathy traits are positively related to dysfunctional relations in participants' families: more psychopathic parents produce higher levels of violence and neglect related to their children. These data are in accordance with previous findings showing that psychopathy is positively related to crimes characterized by family violence (Swogger, Walsh, & Kosson, 2007). Furthermore, psychopathy traits were positively correlated to the family economic poverty. This finding extends on previous data describing psychopathy as a disposition towards risky decision-making and impulsive behavior (Hunt, Hopko, Bare, Lejuez, & Robinson, 2005; Takahashi, Takagishi, Nishinaka, Makino, & Fukui, 2014) which could lead to financial loss. Finally, psychopathic traits in parents correlated negatively with mental health in offspring. A lack of empathy and warm relations with others followed by reckless and impulsive behavior in parents is expected to have detrimental consequences on the psychological functioning of their children. Indeed, previous findings showed that psychopathy is related to a lack of care for children both in mothers and fathers (Lyons, 2015). Hence, besides the confirmation of the SPRS validity, the present findings contribute to the existing data of psychopathy as a disposition towards various socially aversive behaviors.

Limitations and future directions

The present study has several limitations. The most obvious one is a lack of direct measures for establishing validity, i.e. self-report measures of psychopathy in parents. These data would need to be based on more complex research design but certainly needs to be conducted in the future. Furthermore, future research needs to continue the work on the scale itself, especially to some limitations of the scale revealed in the present data. Adding more items to the Emotional coldness scale would probably result in the elevation of its reliability. More work is needed to further improve the factor structure of the scale as well. Nevertheless, considering a lack of short, reliable and valid rating scales for psychopathy assessment, the existing results on SPRS represent a promising basis for improving psychopathy measurement and adding a new tool for the exploration of this set of traits.

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Almost every woman thinks she's "hotter" than the average: Differences in self-assessments of physical attractiveness between women and men

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Abstract

"Better than average" (BTA) effect is a tendency of people to evaluate themselves more positively than they evaluate others. The goal of this study was to examine if women and men show differences in BTA effect when self-assessing their own physical attractiveness (PA), compared to other hypothetical people as a standard. A sample of 444 participants (52.5% women), of the mean age of 26.85 years, rated their own PA on a 10-point scale using a hypothetical average person of the same gender and age as a reference point. Compared to a theoretical mean of 5.5, both genders rated themselves significantly higher than the average. Thus, both women and men exhibit BTA when self-assessing their own PA. In other words, they (arguably) overrate it, but the effect is stronger for women. A random woman, compared to a random man, is 63% more likely to rate her looks higher and will consider herself as being more attractive compared to a (hypothetical) average woman in 94% of cases (compared to a probability of 78% for men). This gender difference in BTA effect can only partially be explained by higher levels of satisfaction with life, physical activity, Extraversion, and Openness to Experience.

Keywords: better than average effect (BTA), physical attractiveness, gender differences, Big 5 personality

Introduction

People are often unrealistic in self-assessments, as we tend to rate ourselves more positively than we rate others (Alicke, 1985; Brown, 1986, 2012; Zell & Alicke, 2011). This is known as a "better than average" (BTA) effect. According to cognitive theories, the BTA effect arises from egocentrism (i.e., usage of information about self, rather than the average person, when self-evaluating abilities and traits) and focalism (i.e., focusing on specific, initially selected information, without considering other relevant information) (Chambers & Windschitl, 2004). According to motivational theories, BTA effect evokes positive emotions and has self-protective functions (Kim, Kwon, & Chiu, 2017).

BTA effect appears whenever important attributes are evaluated (Brown, 2012). Physical attractiveness (PA) is one of such attributes, partially because of the widespread "what is beautiful is good" stereotype and important social benefits that it entails (Dion, Berscheid, & Walster, 1972; Little, Jones, & DeBruine, 2011; Tartaglia & Rollero, 2015).PA also has an evolutionary function as a cue for mate quality and

reproductive value (Gangestad & Scheyd, 2005; Rhodes, 2006).

The aim of this study was to examine if women and men show BTA effect when subjectively rating their own PA, compared to other hypothetical people of their gender and age, using a colloquially popular 1–10 PA measure. We also wanted to determine gender differences in this effect.

Because of the obvious importance of PA, we expect the BTA effect to be present in both genders, but due to greater emphasis on female attractiveness in human species (Gottschall, 2007) and beauty is a primary tool of human female intrasexual competition (Campbell, 2004), we would expect stronger BTA PA effect in women. This is not to say that women have more positive attitudes towards their bodies (e.g., Franzoi & Herzog, 1987; Swami et al., 2010). Rather, due to differences in evolutionary pressures and the fact that women are typically being judged more by potential partners based on the looks, while men are more judged by their status (Li et al., 2013), we would expect women to overrate their PA when compared to the average, assuming that they are subjectively conceiving what the average is.

To ensure that potential differences are not due to other factors, such as the level of physical activity or generally positive (e.g., high Extraversion or general satisfaction with life) or negative affective dispositions or states (e.g., high Neuroticism or depressiveness), we also controlled for several individual difference variables.

Method

Sample and measures

A convenience general sample of 444 participants (52.5% women; 42.3% students) of the mean age of 26.85 ($SD = 7.52$) years was recruited via an anonymous online survey. Participants rated their own PA on a 10-point scale using a hypothetical average person of the same gender and age as a reference point, i.e.: "On a 1 to 10 scale, where 1 is very low physical attractiveness and 10 is very high physical attractiveness, where do you rate your physical attractiveness in comparison to other people of your age and gender?" This 10-point rating system was used due to its arguably "colloquial popularity".

Participants rated their level of physical activity on a 5-point scale, ranging from "0 = sedentary" to "4 = very high activity".

Participants also completed: BFI–44 measure of the Big 5 personality traits (John, Donahue, & Kentle, 1991), PHQ-9 measure of depressiveness (Kroenke & Spitzer, 2002; Kroenke, Spitzer, & Williams, 2001; see also: Subotić, 2015), and the SWLS measure of satisfaction with life (Diener, Emmons, Larsen, & Griffin, 1985).

Results

If we assume normally distributed PA in population and an absence of the BTA effect, the PA self-assessments for a random general sample should cluster around a theoretical mean of 5.5. However, established mean rating score was 6.43 (SD = 1.70; 26.4% of 7's, with 67.9% of 6+) for men and 7.18 (SD = 1.56; 31.8% of 8's, with 84.1% of 6+) for women. Only 3.4% of women and 12.8% of men rated themselves as 4 or less. Both gender means were significantly higher ($ps < .001$) than a theoretical mean of 5.5, with large effect sizes, especially for women: $t(232) = 16.47$, $d = 2.16$; men: $t(210) = 7.89$, $d = 1.09$. The score distributions are shown in Figures 1 and 2.
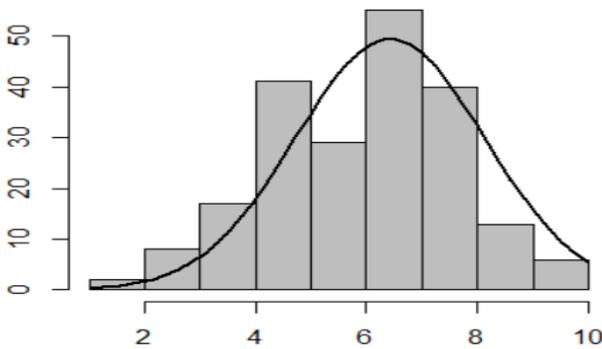
Figure 1: Self-assessed PA scores of men.
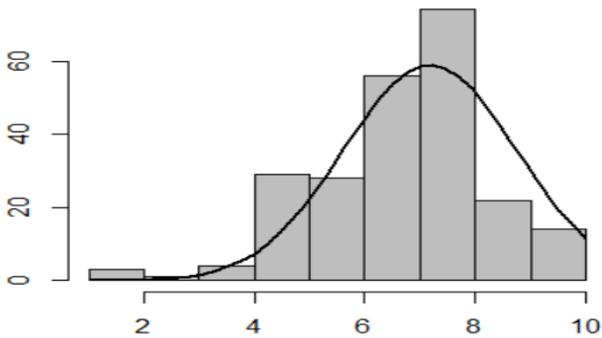
Figure 1: Self-assessed PA scores of women.

Self-assessments made by women were significantly higher than self-assessments made by men, with the effect size of a difference being slightly below the medium intensity: $t(426.54) = 4.84$, $p < .001$, $d = 0.46$.

To test if gender differences in PA ratings are due to personality factors, levels of physical activity, or age, we first determined that they explain 24.2% of the PA variance (Table 1). After these variables were controlled for (via residualization prior to t-test), the gender difference in PA ratings persisted, but the effect size diminished: $t(439.34) = 3.15$, $p = .002$, $d = 0.30$.

Table 1: Prediction of the PA ratings.

Predictors	β	p
Big 5 traits		
Neuroticism	.001	.992
Extraversion*	.143	.005
Agreeableness	.067	.206
Conscientiousness	.040	.491
Openness to Experience*	.133	.008
Satisfaction with life*	.233	.000
Depressiveness	-.004	.932
Physical activity*	.171	.000
Age	-.015	.732

Note: * Significant predictors.

Discussion

The results indicate that the BTA effect exists when people rate their own PA using a 1-10 scale, compared to other hypothetical average people of the same gender and age. As expected, both genders show this effect, but women show it more. In other words, if the sample was not comprised of supermodels (and we are fairly certain that it was not), it is safe to state that both women and men overrate their own PA, but women are more likely to do it. Based on the effect sizes, we can calculate (McGraw & Wong, 1992) that a random woman is 63% more likely to rate her looks higher compared to a random man. A random woman will also consider herself as being better looking than a hypothetical average woman in 94% of cases, compared to 78% cases in which a random man will consider himself as being more attractive than the hypothetical average man.

Participants with higher levels of satisfaction with life, physical activity, Extraversion, and Openness to Experience are more likely to rate their own PA higher. However, these variables can only partially explain gender differences in the BTA effect, as even after they are accounted for, women will still "exaggerate" their looks more than men (roughly 58% more likely, down from 63%). It does not matter how old, physically active, (dis)satisfied with life, prone to negative affect, or depressed they are – women will rate their looks higher than the average more often (and more intense) compared to men.

Being physically attractive is arguably more important for women. Both evolutionary pressure and social norms (Burton, Netemeyer, & Lichtenstein, 1994; Campbell, 2004; Gottschall, 2007; Li et al., 2013) create different expectations concerning PA, as male role is traditionally associated with providing resources, while the female role is more tied with

the attractiveness, which is also a social currency, i.e., a source of social power and status.

Besides the obvious need to replicate the findings, several things should be done in further studies. It should be explored if a tendency to disregard the lower half of the PA numerical scale (here: 10-point) is also present in scales with different numbers of numerical points (e.g., 5-point). Furthermore, instead of allowing the participants to simply imagine what the average PA is, hypothetical "standards of average" could be experimentally primed and perhaps cross-referenced with the participants' (objective) body measures, in order determine under which relative conditions the BTA effect occurs and when gender differences manifest the most.

Acknowledgments

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Attachment and Self-Handicapping Behavior: Mediation Role of Assertiveness

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Abstract

The aim of this paper is to examine the role of Assertiveness in the relation between dimensions of attachment (Anxiety and Avoidance) and self-handicapping behavior (External handicaps in interpersonal relations; internal handicaps in interpersonal relations; External handicaps in situations of achievement; internal handicaps in situations of achievement). The sample consists of 364 participants (m = 141; f = 223), students aged 19–25 ($M = 21.12$; $SD = 1.45$). The instruments used in the research are Questionnaire of experiences close relationships, Questionnaire of Self-Handicapping Behavior and Scale of Assertiveness. The results showed that relation between the Avoidance and all four types of Self-handicapping behavior is not direct, but partly mediated by Assertiveness, while Anxiety has a direct effect on all self-handicapping behavior dimension. The only partial mediation effect that the insecure attachment dimension has on the dimension internal causes in situations of achievement. The assumed relations are partially confirmed, verifying that Assertiveness has the role of mediator in this relationship.

Keywords: attachment; self-handicapping behavior; assertiveness; mediation.

Introduction

Attachment

Attachment is a specific relation in which base is the internal working models. Each individual, through the interaction with a figure of attachment, builds a working model of self and the world. Models can be positive and negative (Bowlby, 1973).

Kim Bartholomew (1990) identified two dimensions which are the basis of these models: The dimension of Anxiety is representative of the internal working model of the self, it is a bipolar dimension, which is low at one pole, while high at the other. The dimension of Anxiety is characterized by a strong need for closeness, fear of being left eventually, and worrying about whether your love has been requited. The dimension of Avoidance is bipolar too; the acceptance of closeness is at one pole while dismissing is at the other; it represents the internal working model of the others.

Self–Handicapping Behavior

Berglas and Jones (1978) first used the term self-handicapping strategies to describe a set of behaviors aimed at mitigating the effects of the potentially negative feedback. By using self-handicapping mechanisms, people reduce the possibility that failing in any field of life could be attributed to the lack of ability (Čolović et al., 2009).

Four types of self-handicapping behaviors (Mitrović et al., 2010):

1. *Self–handicapping by external causes in interpersonal relationships* – the excuses for possible failures are attributed to circumstances beyond the personal characteristics of the person;
2. S*elf–handicapping by internal causes in interpersonal relationships* – the tendency to look for the excuses for failure within the personality traits, in the permanent features such as being constantly sickly, shy or insecure;
3. *Self–handicapping by external causes in situations of achievement* – it is characterized by transferring responsibility to other people around who are perceived as indifferent, hostile or incompetent;
4. *Self–handicapping by internal causes in situations of achievement* – the tendency to use external handicaps as an alibi when it comes to achievement, so the person attributes potential failure to personal characteristics such as perfectionism, problems with concentration, laziness.

Assertiveness

The concept of assertiveness means the willingness of a person to step forward confidently and take a stand, to assert, protect and defend his/her rights, to stand up for himself/herself in a social situation and to confidently express himself/herself. If assertiveness is considered in the context of the extreme passive and aggressive behavior, this concept is between the two extremes (Hjelle & Zigler, 1992).

Previous research

Studies have shown that low scores in Anxiety and Avoidance dimensions, i.e. the existence of secure affective attachment, are linked to social competence and more developed social skills (DiTomaso et al., 2003), greater self-confidence in social situations, assertiveness in communication and positive beliefs about the social world (Collins & Read, 1990), the tendency to perceive oneself as more confident in the area of establishment and maintenance of social relations (Pedović, 2010). Insecurely attached individuals, due to a negative inner working model of themselves or because they have a negative model of others and who concerned that they can endanger them, will seek to protect their self-esteem (Foster, Kernis & Goldman, 2007). When a threat to self-esteem is present, i.e. when failure is expected in some activity, which is most often connected to

capabilities, a person actively searches for or creates the factors which might hamper the performance of this activity, and which may serve as justification for potential failure (Berglas & Jones, 1978). We assume that people who do not have developed skills such as assertiveness, i.e. who not able to stand up for their own or other people's rights in a calm and positive way, without being either aggressive or submissive, will defend their self-esteem using self-handicapping behavior, which is often interpreted in the context of maladaptive response.

Based on previous researches, the main goal of this paper is to examine whether the Assertiveness, which represents our readiness to fight for self-confidence and our rights, will play the role of a mediator in the relationship between the dimensions of Attachment and Self-handicapping behavior. Our hypothesis proposes that insecure attachment, presented through a negative internal working model of self and others, is related to self-handicapping via low assertiveness.

Method

Participants

The sample is convenient, consist of 364 participants from the University of Nish, out of which 141 were males and 223 females, aged 19 to 25 ($M = 21.12$; $SD = 1.45$).

Measures

Questionnaire of experiences close relationships (SM-ECR-R; Hanak & Dimitrijević, 2013). The dimensions of Avoidance and Anxiety were operationalized through the score on this test. The test consists of 36 items and answers are given on a seven-point Likert scale.

Questionnaire of Self-Handicapping Behavior (Mitrović et al., 2010). Self-handicapping behavior was operationalized through the scores on the 4 subscales (External handicaps in interpersonal relations; Internal handicaps in interpersonal relations; External handicaps in situations of achievement; Internal handicaps in situations of achievement). The test consists of 34 items and answers are given on a five-point Likert scale.

The scale of Assertiveness (Tovilović et al., 2010). Assertiveness was operationalized through the score on this scale, which consists of 27 items and answers are given on a five-point Likert scale.

Results

Table 1 shows the correlation, descriptive statistics, and instrument scale reliability, in order to better understand the relationship between the dimensions used below.

Table 1. Correlation, descriptive statistics, and reliability

	1	2	3	4	5	6	7
Avoidance (1)							
Anxiety (2)	.348						
Assertiv. (3)	-.272	-.440					
EHIR (4)	.249	.450	-.234				
IHIR (5)	.322	.599	-.589	.575			
EHSA (6)	.271	.567	-.322	.647	.652		
IHSA (7)	.196	.345	-.237	.477	.474	.578	
Mean	3.48	3.17	3.45	2.33	2.17	2.34	2.78
SD	.75	1.03	.53	.75	.79	.88	.72
A	.78	.89	.89	.78	.85	.77	.66

EHIR – external handicaps in interpersonal relationships; IHIR – internal handicaps in interpersonal relationships; EHSA – external handicaps in situations of achievement; IHSA – internal handicaps in situations of achievement.

The SEM model (Figure 1) shows the direct and indirect effects that the variables accomplish via Assertiveness as a mediator.

Figure 1: Path model showing indirect and direct effects
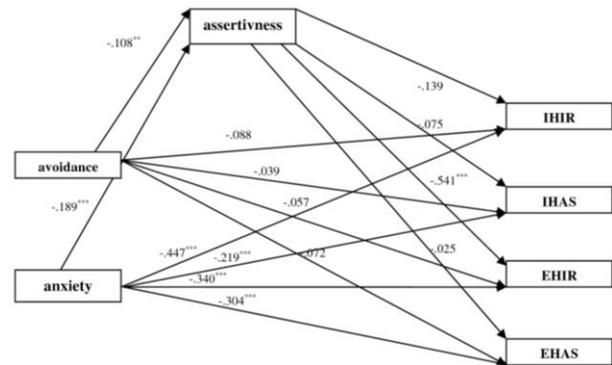
EHIR – external handicaps in interpersonal relationships; IHIR - internal handicaps in interpersonal relationships; EHSA - external handicaps in situations of achievement; IHSA - internal handicaps in situations of achievement.

The results show that Avoidance does not have direct effects on self-handicapping variables, while Anxiety produces direct effects on every one of them. The indirect effect realized both variables of attachment on assertiveness, but assertiveness achieves an indirect effect only in situations of achievement.

Discussion and Conclusions

The results partially confirmed that insecure attachment is related to self-handicapping via low assertiveness. Specifically, it has been confirmed that Assertiveness can be seen as a mediator in this relationship, but only when it comes to achievement situations. More specifically, Assertiveness as a mediator confirms the necessity of socially competent and self-confident behavior in achievement situations (Collins & Read, 1990; DiTommaso et al., 2003; Pedović, 2010).

When it comes to the dimension of avoidance, depends on negative early experiences with others, these people do not react assertively in the mentioned self-handicapping situations. The precondition for adequate action is a highly developed trait of Assertiveness so that a person can stand behind his attitudes and delineate his own responsibility from the responsibilities of others. However, Avoidance does not have a direct effect on self-handicapping behavior, which indicates that the relationship with this construct is not so complex. The absence of a direct effect indicates a correlation that is not direct, but as we see it is mediated by Assertiveness as a variable.

Direct effects that exert Anxiety only confirm the assumption that insecurely attached individuals, with a negative self-concept prone to using self-handicapping strategies, and that such strategies can really be understood as a way of protecting self-esteem. Since Anxiety also has an indirect effect on Assertiveness and one of the strategies for self-handicapping behavior, we can also say that this relation is partially mediated.

Insecure attachment, as we can see, has an indirect effect only in interpersonal relationships in achievement situations. It is possible that achievement situations are more demanding for people when it comes to preserving their self-concept than the demands they have in interpersonal relationships. This strategy is characterized by using external handicaps as an alibi when it comes to achievement, so the person attributes a potential failure to personal characteristics such as perfectionism, problems with concentration, laziness etc.

These results are just an introduction to the research of these phenomena, and in order to better understand the relations between these variables, which is a recommendation to future researchers, it is necessary to examine the relationship with other personality traits and the wider range of factors related to early developmental experiences.

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Differences between Members of Secure and Unsecured Forms of Attachment in the Use of Breakup Strategies

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Abstract

The aim of this research was to examine differences in the breakup strategies among members of various attachment styles. The sample consists of 378 participants (f = 310; m = 68), aged 18–37 (*M* = 23.48; *SD* = 3.49). We used Breakup strategies questionnaire and the Questionnaire of adult romantic attachment. It can be concluded that maladaptive strategies are used by people with Preoccupied and Fearful attachment, while the members of the Avoidance style use only one of them. Nevertheless, the most striking difference lies between the members of the secure attachment, on one side, and the members of the Preoccupied and Fearful on the other, especially when it comes to using the maladaptive strategies, towards which the insecure ones are uncertain/unlikely more inclined. The differences found to confirm the initial assumptions, especially those about the tendency of unsecured styles towards the use of the indirect and less compassionate strategies.

Keywords: attachment; breakup strategies; romantic relationship

Introduction

The breakup of love relationships represents the whole process behind dissatisfaction with the current love affair and includes cognitive, emotional and behavioral components. The termination experience can often be emotionally strong, stressful, and even painful (Sprecher et al., 1998). Researchers in this field (Bowlby, 1982; Simpson, 1987) say that losing a partner may be one of the most traumatic and most stressful events in life.

The aim of this paper is to examine the differences between people who display different forms of attachment in the frequency of using termination strategies. It is assumed that a person with a secure pattern will use strategies described as direct, while an uncertainly attached one will be more likely to use strategies labeled as indirect.

Breakup strategies

Breakup strategies are defined as a verbal or non-verbal approach to the breakdown of love relationships (Collins & Gillath, 2012). They are mainly studied from the angle of the person who ended the relationship since the interruption rarely occurs as a common decision (Baxter, 1982). From the first strategies dealing with breakup topics (Bakter, 1982; Duck, 1982), to contemporary ones involving new forms of communication (Collins & Gillath, 2012), two important criteria are discussed that consider the break-up strategies: the level of directness of the partner who is speaking and level of focus on the partner who is spoken to, i.e. the amount of care and level of compassion. Direct strategies (positive tone and open confrontation) involve a higher level of compassion, compared to escalation strategies, distant communication, and manipulative strategies.

Based on this empirical findings Collins & Gillath (2012) proposed a model which differ seven breakup strategies:

1. *Avoidance* – breakup without any explanation, avoid dealing with the partner and termination process;
2. *A positive tone* – a breakup strategy in which the partner's feelings are taken into account (often more than their own), and efforts are being made to keep the person unharmed;
3. *Open confrontation* – the partner clearly sees the desire to terminate the love affair;
4. *Escalation* - the breakup initiator changes his behavior to make the relationship worse for the partner, hoping that the partner will be the one who will take the initiative of termination;
5. *Manipulation* – a breakup mediated by other people who transmit the information about dissatisfaction or the existence of a new partner;
6. *Distant communication* – means a termination strategy using technical means (phone call, SMS, social networking, etc.);
7. *De-escalation* – the breakup initiator gradually terminates the relationship, and maintains an option for the relationship to be rekindled in the future.

Adult attachment

An important theoretical framework for understanding partnership relations is the developmental concept of attachment by John Bowlby (1982), according to which the quality ratio from early childhood is transferred to the relationships that we realize in the adult age. According to this theory, we distinguish four forms of attachment, depending on the personal self and the self of the others (Bartholomew & Horowitz, 1991): a secure pattern and three unsecured forms: avoidant, preoccupied and fearful. The basic difference between secure and insecure forms of attachment, in the context of this work, is the internal working model of oneself and others. Securely attached have a positive working model of oneself and others, while in the case of unsecured attached there is a negative internal working model of either on self or others (Bartholomew, 1993).

Method

Participants

The sample consists of 378 subjects (f = 310; m = 68), predominantly students, with age from 18 to 37 ($M = 23.48$; $SD = 3.49$). Each of the respondents went through at least one experience of breaking the romantic relationship.

Measures

Breakup strategy Questionnaire (*BSQ*; Collins & Gillath, 2012). This questionnaire proposes the existence of seven break up strategies, operationalized through 42 items. We used backwards translation method, and all subscales have relatively good internal consistency reliability for this sample.

Adult Attachment Questionnaire (*PAVa*; Brennan et al., 1998, modification Kamenov & Jelić, 2003). We operationalized adult attachment through dimensions of Anxiety ($M = 2.47$; $SD = .87$) and Avoidance ($M = 1.88$; $SD = .76$). The scale showed good Cronbach α internal consistency reliability (Anxiety = .86; Avoidance = .85) and expected two-factor structure.

Results

For the classifying participants into categories, we used the mean for 5 degrees Likert scale (min = 1; max = 5; $M = 3$) on Anxiety and Avoidance scales. Participants who reach low scores on both dimensions were classified as Secure, while those with scores higher than 3 were classified as Fearful. Preoccupied participants reach a score higher than 3 just on Anxiety, while Avoidant reach score higher than 3 just on Avoidance. In Figure 1, we showed the distribution of attachment forms into categories.
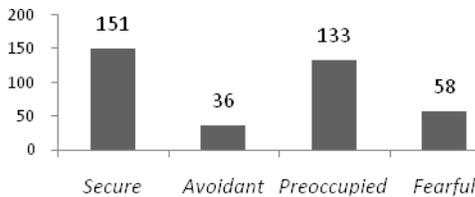
Figure 1: Distribution of Attachment patterns

We used ANOVA to examine differences between patterns in the use of breakup strategies (Table 1).

Table 1: Differences between patterns in the use of strategies and descriptive statistic and reliability for BSQ scale

Breakup strategy	F test	sig.	M	SD	α
Avoidance	4.87	.00	2.32	.96	.91
Positive tone	3.93	.01	3.34	.67	.74
Open confrontation	4.20	.01	3.99	.96	.82
Cost escalation	10.30	.00	2.00	.84	.69
Manipulation	6.38	.00	1.27	.40	.49
Distant communication	4.30	.01	1.51	.72	.65
De-escalation	3.55	.02	2.18	.79	.66

[*] α – Cronbach's alpha coefficient

In Table 2 we showed the results of the Post-Hoc Bonferroni test.

Table 2: Results of attachment intergroup differences on Post-Hoc Bonferroni test

Breakup strategy	Adult attachment pattern (I)	(J)	MD[**]	sig.
Avoidance	Avoidance	Secure	.42	.02
	Fearful	Secure	.50	.00
		Preoccupied	.38	.01
Positive tone	Secure	Preoccupied	.26	.00
	Fearful	Preoccupied	.21	.04
Open confrontation	Secure	Fearful	.50	.00
	Preoccupied	Fearful	.33	.03
Cost escalation	Preoccupied	Secure	.38	.00
	Fearful	Secure	.63	.00
Manipulation	Preoccupied	Secure	.20	.00
	Fearful	Secure	.15	.01
Distant communication	Preoccupied	Secure	.18	.04
	Fearful	Secure	.38	.00
De-escalation	Preoccupied	Secure	.19	.05
	Fearful	Secure	.38	.00

[*] – Only statistically significant differences are shown
[**] – Mean difference

The Open Confrontation Strategy is used by Secure and Preoccupied attached participants, especially when compared with those with Fearful attachment. Secure and Fearfully attached individuals use Positive Tone Strategy more often than Preoccupied. People with Avoidance style of attachment use the Avoidance strategy more often than those with secure attachment, and people with a Fearful style of attachment use the Avoidance strategy more than those with Secure and Preoccupied attachment. The strategies of Escalation, Manipulation, Distant communication and De-escalation are more often used by Preoccupied and fearfully attached, compared to those with secure attachment.

Discussion and Conclusions

The results showed that direct strategies (Positive tone and Open confrontation), which imply a higher degree of feeling and focus on partner emotions are used by people with a Secure form of attachment, more often than by those with an Avoidant or preoccupied form of attachment. In line with the results of some other research (Collins & Gillath, 2012), our results have been shown that partners truly report feeling a higher degree of compassion and care from a partner in the process of breakup, when partner use a direct strategy of relationship termination. Thus, the data obtained in this paper, fit into the theoretical expectations (Baxter, 1982; Bowlby, 1982; Bartholomew & Horowitz, 1991) and the

empirical findings of other researchers (Collins & Gillath, 2012). Avoidance attachment pattern serves only one of the above strategies, Avoidance strategy, and only in comparison with a secure.

However, the most striking difference occurs between individuals with the Secure pattern on the one hand, and the individuals with the Preoccupied and Fearful pattern on the other, when it comes to the use of indirect breakup strategies (Escalation, De-escalation, Manipulation, Distant communication), which those with insecure attachment are more prone to, and that is something which corresponds to the theoretical assumptions upon which this paper is based.

The limitations of this study are primarily based on the low reliability of some BSQ subscales and an unequal number of respondents in attachment patterns, for which we can assume that it has any significant impact on our results. On some future researchers is to confirm these results, and try to understand this phenomenon through other theoretical contexts. Despite these limitations, the current findings provide insight into attachment theory and the impact of attachment on romantic relationships termination, but results can have important implications for therapists and people contemplating a breakup.

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Cognitive empathy distinguishes sadism from psychopathy: Effects on antisocial behaviour

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Abstract

The aim of this study was to explore relations between two dark traits, psychopathy and sadism, and affective and cognitive empathy, as the moderation effect of both empathy components in the relations between these traits and antisocial behaviour. Data were obtained from 221 high school students (66.1% females). Four scales were used: Psychopathy scale from Short Dark Triad – SD3, Short Sadistic Impulse Scale – SSIS, Basic Empathy Scale – BES and Antisocial Behaviour Questionnaire – ABQ. Results showed that sadism was negatively related to both cognitive and affective empathy, while psychopathy was negatively related only to affective empathy. Furthermore, cognitive empathy had a moderation effect on relations between sadism and antisocial behaviour. Sadism had a positive effect on antisocial behaviour on all levels of cognitive empathy, indicating that those with high sadism and sufficiently cognitive empathy are more prone to antisocial behaviour. Although sadism was related to affective empathy, the interaction between them was not significant. On the other side, psychopathy obtained solely effect on antisocial behavior, with no significant moderation effects of empathy components. Results suggest that recognising and understanding another's suffering might be the feature that distinguishes sadism from psychopathy.

Keywords: psychopathy; sadism; cognitive empathy; affective empathy; antisocial behavior

Introduction

The Dark Tetrad (Machiavellianism, narcissism, psychopathy and sadism) represents a set of distinct, but overlapping personality traits (Paulhus, 2014). However, due to many common features shared by psychopathy and sadism, there are authors suggesting that sadism is an aspect of the psychopathic personality constellation (Murphy & Vess, 2003). By definition, psychopathy refers to dishonesty, egocentricity, failure to form close emotional bonds, low anxiety proneness, superficial charm and blame externalization (Hare, 1999), whereas sadism is usually characterized by enjoyment from hurting others (Buckels, Jones, & Paulhus, 2013). Since sadism and psychopathy are both consistently associated with antisocial behaviour (Chabrol, Van Leeuwen, Rodgers, & Séjourné, 2009), in this study we decided to focus particularly on this two dark trait.

One of the features that is known to be common for all of the four dark traits is the callousness, which is related to a lack of empathy (Paulhus, 2014). Although many studies indicated that all of the four dark personality traits are associated with the general lack of empathy (Book et al., 2016; Wai & Tiliopoulos, 2012), some authors suggest that empathy is a complex phenomenon, thus, that should not be studied as a unitary, but rather as a multidimensional construct (e.g. Davis, 1983). Namely, empathy involves both the ability to recognize and understand another's emotions – known as cognitive empathy, and the ability to experience, internalize, and respond to the emotions of others – known as affective empathy.

After delineating the global empathy into cognitive and affective dimensions, the relations between empathy and the dark traits become rather inconsistent. Previous studies have consistently shown negative correlations between affective empathy and both psychopathy and sadism (Pajević, Vukosavljević-Gvozden, Stevanović, & Neumann, 2018; Wai & Tiliopoulos, 2012). However, the relations between cognitive empathy and these two traits remain unclear: in some studies psychopathy is negatively correlated with cognitive empathy (Pajević et al., 2018; Vonk, Zeigler-Hill, Ewing, Mercer, & Noser, 2015), in others there was no significant relationship between the two (Mullins-Nelson, Salekin, & Leistico, 2006; Wai & Tiliopoulos, 2012). Moreover, a small number of studies that explored the relationship between everyday sadism and empathy also reported inconsistent findings. Some authors found negative correlation between sadism and perspective-taking (a concept closely related to cognitive empathy, see Buckels et al., 2013), whereas others argue that a sadist may at least possess an unimpaired cognitive empathy to be able to successfully hurt another (Baumeister, 1997; O'Meara, Davies, & Hammond, 2011).

It has been shown that persons with high levels of sadism react with higher enjoyment if the observed person is in a state of more severe misfortune (Schumpe & Lafreniére, 2016) and that others' suffering represents a positive reinforcement for the sadist (Palermo, 2013). With that in mind, it appears that by the definition, those scoring high on sadism ought to have the ability to recognise and understand another's emotions, i.e. cognitive empathy. On the other side,

psychopathic individuals employ destructive patterns of dysfunctional interpersonal behaviours, augmented by aberrant cognitions, and utilise charm and manipulative techniques for personal gain, regardless of the cost to others (Hare, 1999). It seems that their goals are rather instrumental (Paulhus & Jones, 2015; Woodworth & Porter, 2002). Thus, it is assumed that a person with a high level of psychopathy does not necessarily need a high level of cognitive empathy in order to manifest antisocial behavior.

The relations between empathy and dark traits are more complex and are under developmental factors. Studies conducted on children showed that psychopathic traits are associated with significant deficits in cognitive empathy, but also that there is a recovery to comparatively healthy levels of cognitive empathy in the oldest 9- to 12-year-old age group (Dadds, Hawes, Frost, Vassallo, Bunn, Hunter, & Merz, 2009), This implies that there should be no significant correlation between psychopathy and cognitive empathy in adolescents or adults.

The aim of this study was to explore relations between sadism and psychopathy with empathy components among adolescents. Furthermore, the moderation effect of both cognitive and affective empathy on the relationship between these dark traits and antisocial behavior. We expect the significant moderation effect of cognitive empathy on the relation between sadism and antisocial behaviour, but not between psychopathy and antisocial behaviour. In the case of affective empathy, we expect significant moderation effect on relations between both psychopathy and sadism and antisocial behaviour. If the different pattern of relations were obtained, we could determine which features could distinguish sadism from psychopathy.

Method

Participants and procedure

The sample included 221 secondary school students (66.1 % females), aged from 16 to 19 (*M* = 17.3, *SD* = 0.91). Data were collected in 9 secondary schools (3 gymnasiums and 6 professional schools) in 3 cities in Serbia (Subotica, Novi Sad and Jagodina). The study was approved by the Institutional Review Board. All participants were given the written consent and for students under the age of 18 consent was also given to the parents.

Instruments

Four scales were used: 1. Psychopathy scale from Short Dark Triad Scale (SD3; Paulhus & Jones, 2014, for Serbian adaptation see Dinić, Petrović, & Jonason, 2018), 2. Short Sadistic Impulse Scale (SSIS; O'Meara et al., 2011, for Serbian adaptation see Dinić, Bulut, Petrović, & Wertag, 2018) which measures the trait sadism, 3. Basic Empathy Scale (BES: Jolliffe & Farrington, 2006, for Serbian adaptation, see Dinić, Kodžopeljić, Sokolovska, & Milovanović, 2016) which measures cognitive and affective

empathy, 4. Antisocial Behaviour Questionnaire (ABQ; Luengo, Otero, Romero, Gómez-Fraguela, & Tavares-Filho, 1999) which contains 33 items and measures several types of antisocial behaviour: drug abuse, rule-breaking, theft, aggression and vandalism. In this study, the total score was used (one item with zero variance was excluded, "Stealing the material from the warehouse or from the repairman."). All instruments have 5-point Likert type scale for answering (from 1 = *strongly disagree*, to 5 = *strongly agree*). Reliabilities were given in Table 1.

Results

Sadism and antisocial behaviour variables did not meet the criteria for normal distribution (± 2.00, see Gravetter & Wallnau, 2014), thus, their scores were normalized (Table 1).

Table 1: Descriptives and reliabilities

	M	SD	Sk	Ku	α	n
Psych	2.48	0.72	0.16	-0.38	.74	9
Sadism	1.87	0.64	1.28	2.53	.80	10
Cognitive	4.02	0.56	-0.61	1.51	.80	9
Affective	3.43	0.65	-0.30	0.36	.84	11
AB	0.35	0.29	1.60	4.16	.88	32

Note. n – Number of items

Psychopathy and sadism correlated highly positive and both dark traits were also positively related to antisocial behavior. However, whereas sadism showed significant negative correlations with both affective and cognitive empathy, psychopathy was only negatively associated with affective empathy (Table 2). When the effect of sadism and other variables were controlled, psychopathy obtained no significant correlation with affective empathy. Moreover, antisocial behaviour was significantly negatively related only to affective empathy, but not to cognitive empathy

Table 2: Correlations between variables

	P	S	AE	CE
Psychopathy (P)	1			
Sadism (S)	.53** (.37**)	1		
Affective empathy (AE)	-.29** (-.11)	-.41** (-.19**)	1	
Cognitive empathy (CE)	-.08 (.10)	-.29** (-.18**)	.50**	1
Antisocial behaviour	.50** (.32**)	.43** (.22**)	-.23**	-.05

Note. Partial correlations are in parentheses with controlling for empathy, antisocial behaviour, and sadism or psychopathy.
**$p < .01$.

Moderation analysis was done in macro PROCESS 3.0 (Hayes, 2017) with sex and age entered as covariates. Results of moderation analysis showed that cognitive empathy obtained significant moderation effect only in relations between sadism and antisocial behavior (total $R^2 = .33$, $p < .01$, for interaction effect $R^2 = .02$, $p < .01$, $B = 0.23$, $SE = 0.08$). Sadism had a positive effect on antisocial behaviour on all levels of cognitive empathy, but the effect was significant only when the cognitive empathy scores were average or high (Figure 1). Interaction between sadism and affective empathy was not significant (total $R^2 = .30$, $p < .01$, for interaction effect $R^2 = .01$, $p = .06$, $B = 0.14$, $SE = 0.08$).

In case of psychopathy, there were no significant moderation effects (cognitive empathy: total $R^2 = .35$, $p < .01$, for interaction effect $R^2 = .00$, $p = .79$, $B = 0.03$, $SE = 0.12$, affective empathy: total $R^2 = .35$, $p < .01$, for interaction effect $R^2 = .00$, $p = .30$, $B = 0.11$, $SE = 0.11$). Thus, only effect of psychopathy on antisocial behavior was significant (cognitive empathy: $B = 0.58$, $SE = 0.18$, $p < .01$, affective empathy: $B = 0.58$, $SE = 0.08$, $p < .01$).
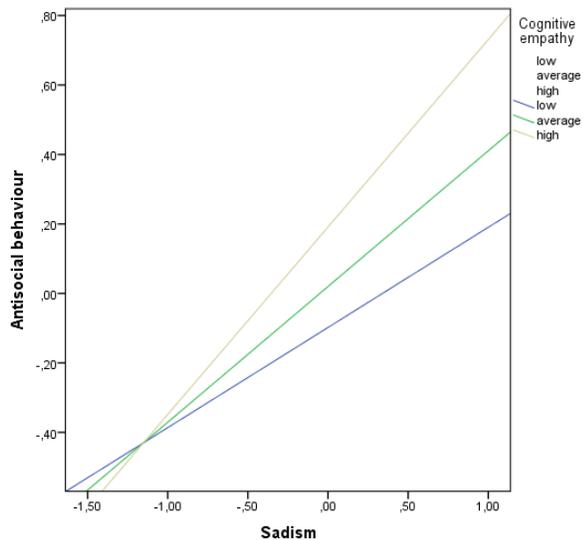

Figure 1: Interaction between sadism and cognitive empathy on antisocial behavior

Discussion

Results showed that psychopathy and sadism are positively related to antisocial behaviour, which is in line with previous studies (Chabrol et al., 2009). As expected, and in accordance with previous studies, the lack of affective empathy is related to antisocial behavior (Jolliffe, & Farrington, 2006; de Kemp Overbeek, de Wied, Engels, & Scholte, 2007). However, cognitive empathy is not related to antisocial behaviour. These results are in accordance with previous studies on bullying, showing a significant negative relationship between bullying and affective empathy, but not cognitive empathy (Jolliffe & Farrington, 2006). Whereas being able to experience others' feelings might actually prevent antisocial behavior, some authors suggest that sufficient cognitive

empathy could even facilitate antisocial behavior (Sutton, Smith, & Swettenham, 1999).

Results of this study showed that psychopathy and sadism could be distinguished in two ways. Firstly, the two traits have different patterns of relations with empathy. Precisely, sadism is negatively related to both cognitive and affective empathy, while psychopathy is only negatively related to affective empathy. These results are partly consistent with the results of previous studies, suggesting negative relations between both dark traits and affective empathy (Pajević, et al., 2018; Wai & Tiliopoulos, 2012). The nonsignificant relations between psychopathy and cognitive empathy is in line with some of the previous studies conducted on adults (Mullins-Nelson, Salekin, & Leistico, 2006; Wai & Tiliopoulos, 2012), and on older children (9-12 years, see Daads et al., 2009). These results imply that relation between psychopathy and cognitive empathy changes during ontogenesis. However, longitudinal studies have to be conducted in order to examine this change in a more detailed manner.

Bivariate correlations between sadism and cognitive empathy indicated that there is a lack of cognitive empathy in those who scored high in sadism. These findings suggest that the lack of understanding of other's emotions could be the reason why sadists do harm to another. However, the pattern of relations becomes a bit more complex when predicting the actual outcome, such as antisocial behavior, which brings us to the second distinction between psychopathy and sadism. Specifically, cognitive empathy emerged as a moderator in the relation between sadism and antisocial behaviour, but not in the relation between psychopathy and antisocial behaviour. Although sadism and cognitive empathy were negatively correlated, sadism had a positive effect on antisocial behavior on average and high levels of cognitive empathy. It appears that those who scored high on sadism generally have lower levels of cognitive empathy, but the higher is the level of their cognitive empathy, the higher is the tendency towards antisocial behaviour. It could be concluded that although "sadists" generally do not understand other's emotions very well, the better they do, the more antisocial behaviour they express. A possible explanation might be that "sadists" with higher levels of cognitive empathy derive more pleasure from hurting others and damaging property since they recognise that these behaviors make others suffering.

On the other side, psychopathy obtained a solely positive effect on antisocial behavior, i.e. there was no moderation effect of cognitive or affective empathy on this relation. It seems that psychopaths are probably instrumental goal-driven, rather than motivated by the suffering of others. For example, aggression in psychopaths is thought to be controlled, purposeful, and used for achieving a desired external goal (e.g. obtaining money or drugs), whereas injury to others is typically secondary to the acquisition of that goal (Glenn & Rainne, 2009). Moreover, it is possible that psychopaths manifest antisocial behavior solely due to their impulsivity, rather than the actual intent to harm. Taken together, results of the current study suggest that recognizing

and understanding others' emotional states might be one of the features that distinguish sadism from psychopathy.

Finally, due to the fact that these findings were based only on the self-reported measures, they ought to be taken with caution. The limitation of using self-reported measures is especially important when it comes to the operationalisation of empathy. Though self-report measures are by far the most typical instrument used in empathy research, they usually tell us very little about empathic accuracy (Gerdes, Segal, & Lietz, 2010). Therefore, using a different measure of empathy, instead of self-report is recommended.

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Examining the effects of disinhibition in understanding empathy and attachment

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Abstract

Starting from the assumptions of triarchic psychopathy model, in the present study, we analyzed the associations between the triarchic psychopathy facets and distinct dimensions of empathy (i.e. cognitive and affective) and attachment (i.e. anxiety and avoidance). Data was collected on 602 students (311 male) with a mean age of 21 years (SD = 4.41) from various faculties in Zagreb, using the Triarchic Psychopathy Measure (Patrick, 2010), Interpersonal Reactivity Index (IRI, Davis, 1983) and The Experiences in Close Relationships scale, modified Croatian version (Kamenov & Jelić, 2003). Multiple regression analyses indicated that disinhibition showed a positive relationship with attachment anxiety and avoidance. Furthermore, disinhibition was positively associated with emotional empathy, and unexpectedly, with some aspects of cognitive empathy (fantasy). The results are in line with the theoretical assumptions proposed in Triarchic psychopathy model that disinhibition is associated with increased internalization.

Keywords: psychopathy, disinhibition, empathy, attachment

Introduction

Triarchic psychopathy model (Patrick, Fowles, & Krueger, 2009) comprises three distinct phenotypic domains with psychological and neurobiological correlates, i.e. boldness, meanness and disinhibition. Disinhibition of affect includes poor emotional regulation, impaired regulation of affect and urges, impulsivity and negative affectivity, while behavioral disinhibition includes alienation and distrust, aggressive acting out (in particular, angry–reactive aggression), untrustworthiness, proneness to drug and alcohol misuse, and norm-breaking behavior (Patrick et al., 2009; Patrick, Drislane, & Strickland, 2012). Present researchers do not consider disinhibition as equivalent to psychopathy. Findings show a positive relationship between disinhibition and externalizing (e.g. conduct problem in childhood, criminal deviance, addictive behaviors), as well as between disinhibition and internalizing (e.g. anxiety, depression). Biological mechanisms theorized to underlie the disinhibition components of psychopathy are underreactivity of the brain's defensive motivational system and impairment in front-cortical regulatory circuitry, respectively (Patrick et al., 2012).

Empathic deficits are one of the most pronounced characteristics linked to psychopathy. Davis (1983) conceptualizes empathy as a set of dimensions related to how one is responsive to others: perspective taking reflects the tendency to adopt the psychological point of view of others, fantasy assesses the tendency to transpose oneself into the feelings and actions of characters of fiction, empathic concern assesses sympathy and concern for the misfortune of others, and personal distress measures feelings of personal anxiety and discomfort in the tense interpersonal contexts.

Brennan, Clark, & Shaver (1998) proposed the two-dimensional model of attachment anxiety and avoidance. Attachment anxiety indicates sensitivity to non-acceptance, an individual views him/herself worthy of having needs met by interpersonal relationship partners. Attachment avoidance represents the degree to which individuals avoid versus approach attachment figures, and their readiness to engage reciprocally in the functions of attachment relationships. The findings regarding the associations between attachment and psychopathic traits (particularly in non-institutionalized populations) are insufficient.

The current study

The main aim of the current study was to assess the associations of triarchic psychopathy facets with the avoidance and anxiety attachment dimensions and cognitive and affective aspects of empathy.

A more specific aim of the study was to clarify the role of disinhibition in the definition of psychopathy. In this respect, we tested whether disinhibition adds incrementally to meanness and boldness in predicting study outcomes (i.e. attachment and empathy).

Based on the theoretical description that disinhibition entails anxiety and difficulties in regulating emotion (Patrick et al., 2009), and in line with previous findings showing that disinhibition was associated with emotionality, sentimentality, and stress reactivity (Poy, Segarra, Esteller, López, & Moltó, 2014; Sica et al., 2015; Sokić & Ljubin Golub, 2014; Stanley, Wygant, & Sellbom, 2013), we hypothesized that disinhibition would be positively related to emotional empathy.

Consistent with the notion that disinhibition entails mistrust, untrustworthiness, weak restraint, distrust and alienation (Patrick & Drislane, 2015; Krueger, Markon, Patrick, Benning, & Kramer, 2007), and based on prior empirical findings (Craig, Gray, & Snowden, 2013), we hypothesized that disinhibition would be positively related to both dimensions of attachment.

Method

Participants

Data was collected on 602 students (311 male) with a mean age of 21 years (SD = 4.41), from various faculties in Zagreb. Participants were asked to complete a battery of self-report measures anonymously.

Measures

Triarchic Psychopathy Measure (Patrick, 2010) consists of 3 subscales: Boldness (19 items; α = .81), Meanness (19 items; α = .84) and Disinhibition (20 items; α = .83).

Interpersonal Reactivity Index (Davis, 1983) consists of 4 subscales (7 items per subscale): Perspective-Taking (α = .71), Fantasy (α = .76), Empathic Concern (α = .77) and Personal Distress (α = .75).

Experiences in Close Relationships Inventory, modified Croatian version (ECR; Kamenov & Jelić, 2003) is a modification of Brennan's Experiences in Close Relationship Inventory (Brennan et al., 1998), and consists of 2 subscales (9 items per subscale): Avoidance (α = .85) and Anxiety (α = .82).

Psychopathy was rated on a 4-point, empathy on a 5-point, while ECR was assessed on a 7-point Likert scale. The result on each of the subscales is formed as the mean of the responses and the higher score indicates a more highly pronounced respective dimension.

Results

Bivariate correlations showed that Disinhibition was related to Anxious Attachment, Avoidant Attachment, and to Personal Distress (Table 1).

Table 1 Correlations and descriptive statistics for all the variables

	1	2	3	4	5	6	7	8	9
1. Boldness									
2. Meanness	.31**								
3. Disinhibition	-.12**	.39**							
4. Perspective taking	-.05	-.47**	-.24**						
5. Fantasy	-.17**	-.25**	.03	.26**					
6. Empathic concern	-.31**	-.69**	-.07	.41**	.37**				
7. Personal distress	-.64**	-.28**	.17**	.02	.26**	.40**			
8. Avoidance	-.06	.29**	.28**	-.14**	-.17**	-.21**	.02		
9. Anxiety	-.37**	-.03	.27**	.04	.23**	.21**	.41**	.09*	
M	51.97	35.59	36.91	24.45	24.40	24.89	19.02	26.26	28.78
SD	7.94	8.49	7.87	4.62	5.58	5.25	5.16	11.24	10.74

**p < .001, * p < .01

Results of the hierarchical regression analyses (Table 2) showed that Disinhibition predicted Personal Distress and Empathic Concern, and Anxious Attachment and Avoidant Attachment (Table 2). Furthermore, the results showed that Disinhibition added incrementally to Boldness and Meanness in accounting for variance in Empathic Concern (ΔR^2 = .04, F[1,596] = 137.31, p < .001), Personal Distress (ΔR^2 = .03, F[1,596] = 97.31, p < .01), Anxious Attachment (ΔR^2 = .04, F[1,596] = 27.67, p < .001) and Avoidant Attachment (ΔR^2 = .02, F[1,596] = 18.16, p < .001).

Table 2 Results of hierarchical regression analyses (β)

	Perspective taking	Fantasy	Empathic concern	Personal distress	Avoidance	Anxiety
Model 1 - R^2	.23**	.08**	.49**	.42**	.11**	.14**
Gender	-.01	.14**	.10*	.14**	.02	-.04
Age	-.05	-.04	-.03	-.01	.01	-.04
Boldness	.11*	-.09	-.09*	-.60**	-.17**	-.40**
Meanness	-.51**	-.17**	-.63**	-.04	.36**	.08
Model 2 - R^2	.23**	.09**	.53**	.45**	.13**	.18**
Gender	-.01	.14*	.09*	.14**	.02	-.05
Age	-.05	-.04	-.04	-.01	.01	-.05
Boldness	.10*	-.06	-.03	-.55**	-.13*	-.34**
Meanness	-.49**	-.23**	-.74**	-.13*	.28**	-.04
Disinhibition	-.04	.13*	.23**	.17**	.16**	.23**

**p < .001, * p < .01

Discussion and conclusions

In general, the results supported the hypotheses and showed that disinhibition was related to the avoidance and anxiety attachment dimensions. Our results are in line with the assumptions of the triarchic model that disinhibition entails mistrust, untrustworthiness, weak restraint, distrust, alienation and difficulties in regulation of emotions (Patrick & Drislane, 2015). Similarly, relations were obtained in earlier studies (i.e. Craig et al., 2013).

Also, in line with predictions, disinhibition uniquely positively predicted personal distress which represents the emotional component of empathy and indexes the extent to which an individual experiences feelings of discomfort or anxiety when observing another person's negative experiences (Deceti & Yoder, 2016). This finding is in line with the theoretical assumptions that disinhibition entails high emotionality. Our results are similar to the previous studies (e.g. Poy et al., 2014; Sica et al., 2015; Sokić & Ljubin Golub, 2014; Stanley et al., 2013) showing that disinhibition is associated with indicators of elevated internalization such as anxiety, sentimentality and stress reactivity.

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Adverse childhood experiences and college achievement: The mediating role of depressiveness

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Abstract

Adverse childhood experiences (ACEs) are distressful and potentially traumatic events during childhood. The goal of this research was to examine a link between the ACEs and college achievement (i.e., the average college grade, GPA). Given the robust link between the ACEs and depressiveness, and a negative impact that depression can have on academic achievement, we explored a mediating role of depressiveness scores between the ACEs and the GPA. The sample comprised 142 undergraduate college students. On a bivariate level, the ACE score correlated with depressiveness, but neither ACEs nor depressiveness scores correlated significantly with the GPA. However, when entered together in a mediation analysis, it was established that higher ACEs predict higher depressiveness, which, in turn, predicts lower GPA. At the same time, there is a direct portion of the effect, which suggests that higher ACEs predict higher GPA when depressiveness is accounted for. Thus, even though a total direct effect of the ACEs on the GPA is not significant, the results imply that this might be due to the ACEs having both negative and positive conditional effects on the GPA. We suggest that future research should examine the mechanisms by which overcoming adversity can have a positive impact on higher education achievements, likely through coping and resilience.

Keywords: adverse childhood experiences (ACEs); college achievement; college grades; depressiveness

Introduction

Adverse childhood experiences (ACEs) are distressful and potentially traumatic experiences during childhood, such as physical and sexual abuse, physical and emotional neglect, deprivation, etc. ACEs have been very robustly and (most likely causally) linked to various negative health and social outcomes, including substance abuse, heart, pulmonary and sexually transmitted disease, relationship problems, obesity, depression, suicide attempts, and early death (Larkin, Shields, & Anda, 2012). The adverse effects of trauma exposure have been long known to health professionals, but the most important body of evidence to date came from the Adverse Childhood Experiences Study, which is a large ongoing longitudinal study conducted by the Centers for Disease Control and Prevention (CDC) (Larkin et al., 2012). This study has shown that the ACEs are related to a multitude of negative outcomes in a dose-dependent way, meaning that the higher the number of ACEs is, the higher the incidence and/or severity of the negative outcomes are. It is less important which specific ACEs occurred, as their cumulative number is more important than their severity (Larkin et al., 2012; Souers & Hall, 2016).

The negative effects of the ACEs manifest even at an early age. For example, studies done on school-age children have found a correlation of the ACEs with chronic diseases, poor mental health and lower school engagement and achievement (Bethell, Newacheck, Hawes, & Halfon, 2014). Furthermore, compared to students with no ACEs, children with one ACE are 2.2 times more likely to have school attendance problems, 2.4 times more likely to have behavior problems, 1.5 times more likely to have coursework problems, and 2.3 times more likely to have general health issues. The corresponding probabilities for children with two ACEs are 2.6, 4.3, 2.5, and 2.4, respectively. Probabilities for children with 3+ ACEs are 4.9, 6.1, 2.9, and 3.9, respectively (Souers & Hall, 2016). This implies two things. First, same as the ACE effects in adulthood, the effects manifested at an early age also appear to be dose-dependent. Second, ACEs are obviously relevant not only from the physical and mental health point of view but from the educational point of view as well, as they are clearly linked to various academic and school-related problems.

Note, however, that evidence for the links between the ACEs and school problems and achievement are mostly limited to elementary school, and to a lesser degree high school (e.g., 6-11 years, see: Souers & Hall, 2016; 6-17 years, see: Bethell et al., 2014). The association between the ACEs and academic variables in higher education are largely unknown. Therefore, the goal of this study was to provide a preliminary insight into the association between the ACEs and the academic achievement at the college level (i.e., the average college grade – GPA). Because the effects of the ACEs on educational outcomes might be conditioned by other factors (Bethell et al., 2014), we were also interested in testing if the depressiveness can play a mediating role between the ACEs and the GPA. We chose to focus on the depressiveness because a positive link between the ACEs and depression is very well established (Chapman et al., 2004;

Larkin et al., 2012), as is a negative link between the depression and academic outcomes at all educational levels, including college (e.g., Andrews & Wilding, 2004; Fröjd et al., 2008).

Method

Sample

The sample comprised 142 undergraduate college students from Bosnia and Herzegovina (mostly from the University of Banja Luka), of the average age of 22.62 ($SD = 2.56$) years. The majority of the participants (67.6%) were females. Participants responded via an anonymous online questionnaire.

Instruments

ACEs were measured by a self-report inventory developed for the original CDC study (and since thoroughly validated; see, e.g., Dube, Williamson, Thompson, Felitti, & Anda, 2004; Finkelhor, Shattuck, Turner, & Hamby, 2015; Larkin et al., 2012). The inventory measures 10 ACEs, with some having multiple subquestion alternatives, e.g..: "*Did an adult or person at least 5 years older than you ever…: touch or fondle you or have you touch their body in a sexual way?; or Attempt or actually have oral, anal, or vaginal intercourse with you?*" Answering "yes" on either alternative counts as a "yes" for the given ACE. "Yes" responses were summed up to a total 0-10ACEs score.

PHQ-9 (Kroenke & Spitzer, 2002; Kroenke, Spitzer, & Williams, 2001) measures nine self-reported depressiveness symptoms during the last two weeks according to DSM-IV/DSM-V criteria. The answers range from "0 = never" to "3 = every day". Like other Bosnian-Croatian-Serbian (BCS) samples (Subotić, et al., 2015), a total score had good internal consistency: $\alpha \approx \omega \approx .89$.

GPA (grade point average, i.e., average college grade) was based on the self-reported two-decimal average of all college grades, with a possible range from 6 to 10.

Results

Average values and correlations of the ACEs, GAP & depressiveness

The students reported only 0.87 ($SD = 1.29$) ACEs on average, which is much less than previously reported general sample BCS values, obtained using the same mode of surveying, e.g., $M = 1.42$, $SD = 1.72$ (Subotić, Dimitrijević, & Radetić Lovrić, 2016): $t(141) = -5.04$, $p < .001$, $d = 0.85$. The average depressiveness score was 6.23 ($SD = 4.27$), which is slightly, but not significantly less than other normative general BCS sample values, e.g., $M = 6.91$, $SD = 6.00$ (Subotić, et al., 2015): $t(141) = -1.89$, $p = .06$, $d = 0.32$. The average GPA was 7.86 ($SD = 0.82$).

On a bivariate level, the ACEs correlated with depressiveness: $r = .34$, $p < .001$. However, neither ACEs nor depressiveness score correlated significantly with the GPA: $r = .12$, $p = .17$, and $r = -.12$, $p = .14$, respectively.

Mediation

The mediation analysis is shown in Figure 1. There is *a significant indirect effect* (*a*b* path) showing that the ACEs indeed do predict lower GPA through higher depressiveness.

At the same time, even though *a total direct* effect (*c* path) of the ACEs on the GPA *is not significant,* there is *a portion of the direct effect*, which suggests that higher ACEs directly predict higher GPA, if depressiveness is accounted for (*c'* path).
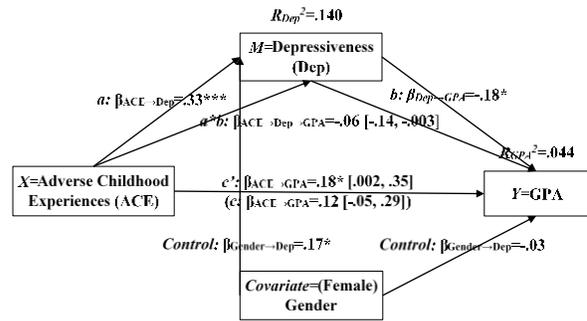

Figure 1: The mediation of ACEs (*X*) on the GRA (*Y*) through depressiveness (*M*). Gender was controlled for as a covariate because of slight gender sample imbalance.

Discussion

The results show that even though a total direct effect of the ACEs on the GPA is not significant (which is contrary to what one might expect based on the primary and high school data; Bethell et al., 2014; Souers & Hall, 2016), the results imply that this might be due to the ACEs having both negative and positive conditional effects on the GPA.

When the ACEs lead to negative mood states, i.e., depression, its impact on the GPA will be negative. If that is not a case, i.e., (we hypothesize) when a person is able to cope or has developed resilience, the effects might even be positive – overcoming trauma could manifest as an academic asset. A similar mechanism is described in the literature. Bethell and colleagues (2014) have demonstrated that children (ages 6-17) who have built resilience, defined as: "staying calm and in control when faced with a challenge" (p. 2107), had diminished negative impacts of the ACEs. Resilient students had higher rates of school engagement and were less likely to repeat grades compared to students who did not exhibit resilience.

At the college level, it seems that this might even translate into an actual advantage and not just a mitigation of the negatives. This might partially be due to more time available for a person to mature and learn how to cope, or due to students who were not able to achieve that goal – dropping out or never even going to college (which relatively low average ACE score on our sample implies).

Future research should examine the mechanisms by which overcoming adversity can have a positive impact on higher education achievements.

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Scale for Higher Education Teaching – Teacher-oriented or Student-oriented

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Abstract

The scale for higher education teaching – teacher-oriented or student-oriented is a self-reported questionnaire constructed to measure the perception of students regarding the teaching at the faculties they study at. The research question was: Whether the questionnaire satisfied the metric characteristics (reliability and factor analysis) which allow its use in practice. The questionnaire consists of two sub-scales: one measuring the perception of students regarding the teacher-oriented teaching and the other measuring the perception of students regarding the student-oriented teaching. All claims are evaluated on the Likert scale from 1 – I do not agree to 4 – I completely agree. An example of teacher-oriented teaching is the claim: "In class, the teacher (the assistant) is the center of knowledge, and the focus is almost exclusively on the content that is being taught." On the other hand, an example of student-oriented teaching is the claim: "The teacher (the assistant) believes that students come with their own experiences and knowledge."

The results show that reliability of the test for the teacher-centered teaching subscale is Cronbach $\alpha = 0.70$, of the student-centered teaching subscale is 0.95, while of the entire test is 0.87. The factor analysis differentiated the following four components: 1. Teacher-oriented or student-oriented teaching, 2. Learning outcomes, 3. Teaching strategies and 4. The environment in teaching. It means that instruments may be used for research and practical purposes.

Keywords: higher education teaching; teacher-oriented teaching; student-oriented teaching.

Introduction

It is known that the primary and secondary education teaching has been subject to several examinations and that efforts have been made by experts and the Ministry of Education to improve it. Nevertheless, these activities do not include the advancement of higher education teaching, since it is probably regarded that is should be left to the students and their learning of subjects and taking of examinations, where teaching is only a small basis in the students' knowledge. At the faculties less and less attention is paid to developing professional skills and practical work by the students (which actually is their objection during the studies). This can be achieved if the teaching is student oriented, that is, it is a teaching where students are active participants and not just passive listeners to what the teacher lectures.

In order to explain some of the meanings included in the student-centered teaching/learning, they will be compared to the traditional manner of teaching called teacher-centered teaching/learning. Richard Felder wrote numerous papers on the usefulness of the active, cooperative and inductive methods of teaching (Felder & Brent, 2003). Some of them are reports from his own research on the use of active

learning methods in the classroom, and others are theoretical research of literature (Bullard & Felder, 2007).

The American Psychological Association established fourteen principles of student-centered teaching which can be summed up through the following four domains (Lambert & McCombs, 1998, Alexander & Murphy, 1993):

Knowledge base – determines what new information the student can gather, how he/she will organize and present them, and how he/she will filter them through his/her experience

Strategic processing and executive control – ability to think in order to regulate their thoughts and behavior (Lambert & Mac Combs, 1998).

Motivation – Research shows that personal involvement, inner motivation, personal dedication, confidence in the ability to succeed, and the perception of control over learning all lead to more learning and high achievements at school (Murphy & Alexander, 2000).

Development and individual differences – individuals develop through development stages which are inherent and environment-influenced.

In order to examine the teaching in higher education, perceived by the student, this questionnaire was made. All these characteristics were taken into account when preparing the questionnaire.

The aim of this paper is to present the process of calculating the metrical characteristics of the questionnaire and its reliability when measuring this occurrence. The problem of this research consists of the question: *Whether the questionnaire satisfied the metric characteristics (reliability and factor analysis) which allow its use in practice*?

Method

Research participants

The research included 203 students, from 3 different faculties within the Ss. Cyril and Methodius University in Skopje, as follows: Faculty of Philosophy ($n = 97$), Faculty of Architecture ($n = 50$) and Faculty of Philology ($n = 56$). The students were the second and fourth year of study. The testing was carried out in the academic 2015/16 year.

Statistical procedure

In order to assess the metrical characteristics of the test, the Cronbach's alpha measures for test reliability was used, as well as Factor analysis in order to separate the components of the test.

Questionnaire structure

The questionnaire contains 38 statements, divided into two sets, where 18 statements refer to measuring the teacher-

centered teaching (lectures and exercises) and 20 statements refer to measuring the student-centered teaching (lectures and exercises). Some of the teacher-centered teaching statements are: In class, the teacher (teaching assistant) is a center of knowledge, and the focus is almost exclusively on the content being taught; Students are seen as "empty" receptacles, and teaching is seen as a knowledge-transferring process; As a result, there is no (or there is a small) effort to take into consideration the prior and/or implicit knowledge of the students (though "incompletely" or "wrongly") on the topic; The teaching is aimed at the "average" student and everyone is forced to advance with the same pace. Examples of the student-centered teaching statements are: The teacher (teaching assistant) thinks that students come to class with their own experience and knowledge; The focus in class is not only on what was taught but also on how to learn that effectively; The main preoccupation of the teacher (teaching assistant) is whether the students will understand the content, and not his/her performance as a teacher that only transmits facts; The teacher (teaching assistant)considers the students to have different styles of learning, so individual answers are encouraged, which helps boost their creativity; In-class teaching is presented as an active dynamic process in which connections occur between various facts, ideas and processes; These connections occur through dialogue between the teacher and the students, as well as among students.

Response options and scoring

The assessment was made based on a Likert scale from 1 (disagree) to 4 (strongly agree). The subscales consist of statements intended for: general assessment of teaching, regarding the expected results from teaching, regarding the teaching strategies and the learning environment. The minimum score on the teacher-centered teaching subscale is 36 (together with the lectures and exercises assessments), with the maximum being 144. Thus, the minimum score separately for the lectures and for the exercises on the teacher-centered teaching subscale is 18, while the maximum is 64. For the student-centered teaching subscale, the minimum score is 40, and the maximum is 160 (together with the lectures and exercises assessments), while the minimum score separately for the lectures and exercises for the student-centered teaching assessment subtest is 20, and the maximum is 80.

Results

Cronbach's Alpha for the teacher-centered teaching assessment subscale is 0.70, while the reliability of the student-centered teaching assessment subscale is 0.95. The Cronbach's Alpha coefficient for the inner consistency of statements of the entire instrument is 0.87, indicating that the instruments may be used for research purposes. The Factor analysis extracted four components (in Table 1.) out of 36 items in the questionnaire, in two sub-scales. The first 18 items describe the teacher-oriented teaching, while the second 18 describe the student-oriented teaching. The first component explains the variance with 15.19%, the second

component with 13.10%, the third component with 10.33% and the fourth component with 9.04%.

Table 1: Extracted components of the Scale for teacher-oriented or student-oriented teaching (Factor analysis)

Component	Total	% of variance	Cumulative
Teacher-oriented or student oriented teaching (1)	2.733	15.185	15.185
Learning outcomes (2)	2.359	13.107	28.292
Teaching strategies (3)	1.86	10.331	38.623
The environment in teaching (4)	1.628	9.042	47.665

From the covariance matrix it can be seen that each component corresponds to the covariance, i.e. each component is separated from the covariance as a separate component.

Table 2:Covariance matrix (Factor analysis)

Components	1	2	3	4
1	1	0.000	0.000	0.000
2	0.000	1	0.000	0.000
3	0.000	0.000	1	0.000
4	0.000	0.000	0.000	1

Conclusion

According to the results, this instrument satisfies the statistical parameters for its application in higher education teaching. We believe that researches, teachers and other participants in education and in high education, should have full confidence in using the measure for applied and researches purposes.

This opportunity can convince university teachers that the time has come to transform the traditional model of teaching. It is possible to achieve an increasingly united and global community of learners – including the students and their teachers – who become dynamic, self-organizing members of an interconnected and interrelated social network and collaborative learning community. The challenge is to work together with a new set of core principles and values. Can we let those practices naturally evolve in the diverse, natural, and organic way that creates learner-centered systems that are culturally and contextually responsive to learner and community needs?

In order to obtain the questionnaire please contact the following e-mail: surbanovska@yahoo.com.

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Demographic Characteristics and Organizational Citizenship Behaviour of Employees

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Abstract

The aim of this study was to investigate if there are differences in the expression of the Organizational Citizenship Behaviour of employees depending on the gender, age, and level of education and the length of service of employees. The sample consisted of 651 employees. We used the demographic checklist and Organizational Citizenship Behaviour Questionnaire which contains three subscales: Organizational Citizenship Performance, Interpersonal Citizenship Performance and Job/task Citizenship Performance. A significant difference has been determined in Interpersonal Citizenship Performance considering gender and education level of employees, and in Organizational Citizenship Performance considering the age of employees. Women are more prone to Interpersonal Citizenship Performance. Employees who have obtained high school degree, college and a university degree or higher show higher levels of Interpersonal Citizenship Performance than the employees who have obtained elementary school degree. Employees older than 56 show the highest level of Organizational Citizenship Performance, while employees younger than 25 show the lowest level of Organizational Citizenship Performance. We can conclude that gender, age and education level of employees significantly determine Interpersonal Citizenship Performance and Organizational Citizenship Performance.

Keywords: Organizational Citizenship Behaviour; demographic characteristics; employees

Introduction

Organizational Citizenship Behaviour represents "individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization" (Organ, 1988, pp. 4).

Organizational Citizenship Behaviour of employees facilitates the coordination of activities within the organization, increases the productivity of employees, enhances the stability of organizational performance and provides more effective adjustment of the organization to the changes in its surrounding.

Organizational Citizenship Behaviour consists of three dimensions: Interpersonal Citizenship Performance, which includes helping other members of the organization, as well as cooperating with them, social participation and interpersonal facilitation; Organizational Citizenship Performance, which means compliance with the organizational rules and procedures and commitment to organization; and Job/task Citizenship Performance, which involves perseverance and commitment to job/task, job/task conscientiousness and functional participation (Coleman & Borman, 2000).

It is proven that dispositional characteristics of employees, such as personality traits and attitudes towards the work and organization, have an important role in expressing the organizational citizenship behaviour of employees. However, little is known about the role of demographic characteristics of employees in displaying organizational citizenship behaviour (Organ, Podsakoff & McKenzie, 2006).

The aim of this study was to investigate if there are differences in the expression of the Organizational Citizenship Behaviour of employees depending on the gender, age, level of education, and the length of service of employees. Women are more altruistic and more prone to help others than men (Morrison, 1994). With age, the focus of an individual is diverted from competing with others to cooperating with and helping others (Kanungo & Conger, 1993). Persons with higher education level are more inclined to help their colleagues and follow the rules of organization (Rose, 2005). Individuals with longer work experience are more committed to socially oriented tasks (Beier & Ackerman, 2001). It is, therefore, to be assumed that women, older persons, persons with higher education degrees and longer work experience show a higher level of Organizational Citizenship Behaviour.

Method

Participants and Procedure

Participants were 651 employees (48.8% female) in small and medium-sized enterprises (49.77% in state-owned organizations) from Banja Luka, Bosnia and Herzegovina (51%) and Vienna, Austria. The sample was divided into four age cohorts: up to 25 years of age (16%), 26-35 (42.9%), 36-45 (23.2%), 46-55 (13.5%) and over 56 (4.5%). Participants' level of education ranged from elementary school degree (2.2%), two- or three-year school degree for skilled or highly skilled workers (10%), high school degree (31.8%), and college degree (6.1%) to a university degree (49.9%). The sample was divided into four cohorts according to the length of service of employees: up to 5 years of service (39%), 6-15 (37.3%), 16-25 (13.4%) and over 26 (10.3%). Data collection was performed through the paper/pencil method, in organizations in which respondents worked.

Instruments

Organizational Citizenship Behaviour Questionnaire (Coleman & Borman, 2000) consisted of 27 five-point Likert-type items grouped into three subscales: Interpersonal Citizenship Performance, Organizational Citizenship Performance and Job/task Citizenship Performance. Cronbach's Alpha was .77 for the Interpersonal Citizenship Performance Scale, .86 for the Organizational Citizenship Performance Scale and .80 and for the Job/Task Citizenship Performance.

Results

The results of MANOVA showed that there was significant difference in the expression of the Organizational Citizenship Behaviour depending on the gender (Wilks' λ = .98, $F(3,642)$ = 3.31, $p < .05$, $\eta p^2 = .015$), age (Wilks' λ = .97, $F(12,1704)$ = 1.73, $p < .05$, $\eta p^2 = .011$) and level of education (Wilks' λ = .96, $F(12,1704) = 2.21$, $p < .001$, $\eta p^2 = .014$).

The results of ANOVA shown the significant differences in Interpersonal Citizenship Performance considering gender ($F(1) = 3.89$, $p < .05$, $\eta p^2 = .006$) and education level of employees ($F(4) = 2.726$, $p < .05$, $\eta p^2 = .017$). Women show a higher level of Interpersonal Citizenship Performance than man.
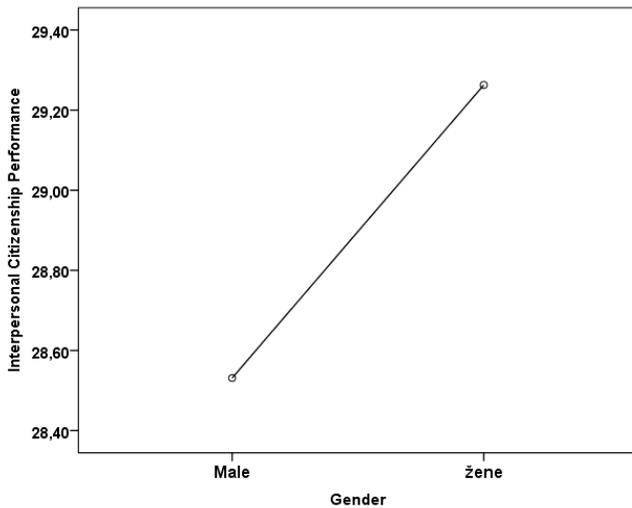

Figure 1: The relationship between gender and Interpersonal Citizenship Performance

The *Dunnett's C* post hoc test revealed that employees who have obtained high school degree, college and a university degree or higher show higher level of Interpersonal Citizenship Performance than the employees who have obtained elementary school degree. Employees who have obtained two- or three-year school degree for skilled do not differ significantly in displaying Interpersonal Citizenship Performance compared to the employees who have obtained elementary school degree, high school degree or university degree.
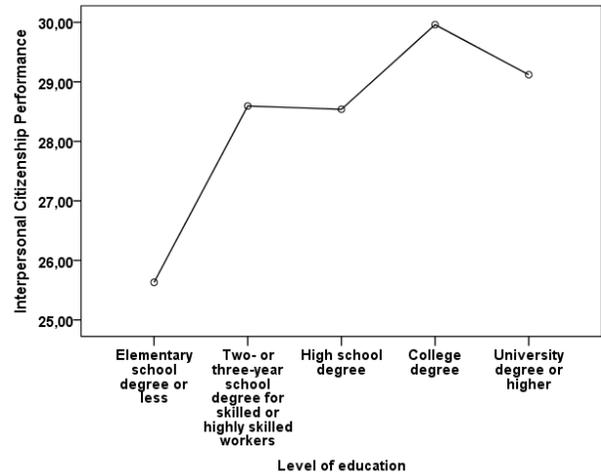
Figure 2: The relationship between the level of education and Interpersonal Citizenship Performance

A significant difference has been determined in Organizational Citizenship Performance considering age of employees ($F(4) = 4.32$, $p < .001$, $\eta p^2 = .026$). The Tukey-Kramer post-hoc test reveals that employees older than 56 years show the highest level of Organizational Citizenship Performance, while employees younger than 25 years show the lowest level of Organizational Citizenship Performance. Employees aged 26-35 and 36-45 do not differ significantly in displaying Organizational Citizenship Performance compared to the employees who are older than 56, or employees younger than 25, nor do they differ mutually.
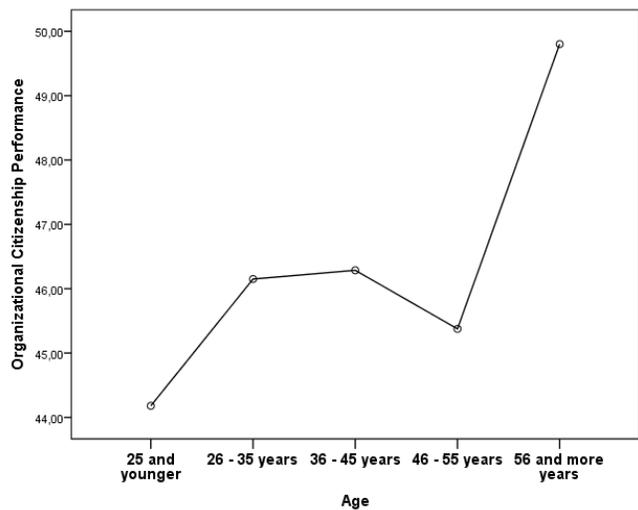

Figure 3: The relationship between age and Organizational Citizenship Performance

There were no significant difference in Job/task Citizenship Performance considering gender ($F(1) = 4.32$, $p > .05$), age ($F(4) = .63$, $p > .05$), education level ($F(4) = 2.33$, $p > .05$) and the length of service of employees ($F(3) = 1.13$, $p > .05$).

Discussion and Conclusion

The results show that women show a higher level of Interpersonal citizenship performance. Having in mind the fact that gender roles create expected behaviours necessary for fulfilling the role (Huei, Mansor & Tat, 2014), and that Interpersonal Citizenship Performance involves concepts of interpersonal altruism and interpersonal conscientiousness (Coleman & Borman, 2000), the obtained results are not surprising. Women are expected to show more empathy and care for others (Eagly & Crowly, 1986).

The result that people who gained elementary school degree or even less show a lower level of Interpersonal Citizenship Performance is in accordance with the results of the earlier studies. Previous studies (e.g. Johnson & Elder, 2002; Lindsay & William, 1984; Rose, 2005) have also indicated that the employees with higher education degree are more prone to help other members of the organization and develop good relations with other members of the organization.

Also, results show that the older employees show a higher level of Organizational Citizenship Performance. Since the young and the old employees view themselves and the work they do in essentially different ways, this is probably the reason why their approach to the organization is different. Younger employees inevitably go through the phases of accepting themselves and the job and the process of adjusting their own needs with the needs of organization, while the older employees have a clear view of themselves in terms of work (Wagner & Rush, 2000), so they can more easily adapt to the needs of their organization.

Results of this study showed that gender, age and education level of employees significantly determine Organizational Citizenship Behaviour of employees. The obtained results are important for the organization's management to decide which people to hire aimed at the promotion of Organizational Citizenship Behaviour.

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How Is Exposure to Provocative TV Content Associated with Beauty Standards and Risky Sexual Behaviour of Adolescents?

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Abstract

The aim of the study is to discover whether the exposure to provocative media content affects adolescents' beauty standards and increases the tendency for risky sexual behaviour. Participants rated photographs of *natural beauties* and *provocative female prototypes* on dimensions of beauty and attractiveness. For female participants, additional indicators of the beauty standards were: the *desired resemblance* to "natural" or "provocative", *anticipated attractiveness* for each and readiness to do a plastic surgery. *Exposure to provocative TV content* and *risky sexual behaviour* were measured by questionnaire. Exposure to provocative TV content is positively correlated to rated beauty and attractiveness of provocative prototypes and desired resemblance to provocative ones, and negatively correlated to rated beauty and attractiveness of natural women, as well as to the anticipated attractiveness of natural women. 40% of girls intend to do a plastic surgery, whereas those spending more time exposed to provocative TV content show a higher tendency for risky sexual behaviour.

Keywords: beauty standards; adolescents; provocative TV content, a tendency towards risky behaviour

Introduction

Social learning theory, as a concept explaining how specific behavioural patterns, rewarded or punished, are learnt by children by looking up to the significant models (Bandura, Ross, & Ross, 1961), sheds light on the influence that TV content has on the youngsters. It is well known that violent behaviour of children is correlated to the exposure to violent content in computer games or TV programmes (Anderson & Bushman, 2002; Luo, Lan, Chong, Abdullah, & Roslan, 2010). Moreover, evidence suggests that unrealistic aesthetic standards of girls, affect one's self-confidence and body-image, which in some cases leads to serious eating disorders (Harrison, 2000; Anschutz, et. al, 2011, Schooler & Trinh, 2011). Interestingly, TV content, among other media sources has a significant impact on the internalization of particular standards and self-esteem. Three mechanisms can be extracted as the main factors through which television impacts its' audience: 1. Entertainment, 2. Social learning and 3. Beauty internalization schemes. The latter two have emerged to be crucial regarding negative effects on both genders (Tiggemann, 2005). The fact that explicit TV content leads to more strict criteria of female beauty standards, while it is simultaneously correlated with higher promiscuity and lacking awareness of the importance of preservatives, represents alarming data that warn us about

potential detrimental consequences on adolescents' health (Brown, Childers & Waszak, 1990). Taking into account all the aforementioned, the aim of this study is to examine whether popular TV shows in our cultural context, such as *realities*, affect beauty standards and the tendency for risky sexual behaviour in adolescents.

Aims of the study

The purpose of the study is to investigate correlations between Exposure to provocative TV content and female beauty standards internalized by adolescents. Another objective is to examine whether the exposure to provocative TV content is associated with the tendency for risky sexual behaviour and what type of pressure (on physical appearance or sexual behaviour) girls and boys face.

Method – Pilot Study

A pilot study was conducted in order to choose representative photographs of natural and provocative prototypes of women for the final study. The sample of 66 participants (Average age = 26.5), was instructed to estimate each of 47 photos of young women' portraits on 5-degree Likert's scales regarding Beauty, Natural look, Familiarity and Desired resemblance to provocative prototypes, typical for popular reality shows („Starlets"). Criteria for the sample of Natural beauties were highest scores on Beauty and Natural look and the lowest scores on the Desired resemblance to "Starlets" and Familiarity. The final cluster of provocative prototypes included photographs with the highest scores on Desired resemblance and the lowest scores on the Natural look and Familiarity. The final sample of photographs sustained of 7 photos per each of the groups (Natural beauties and Provocative prototypes) controlled in a way that both samples included the equal presence of dark/light hair colour and smiling.

Method – Final study

Sample

285 participants (189 girls) took part in the survey, aged 14 to 22 (*M* = 17). 70% of participants were from Belgrade.

Variables and instruments

Independent variable: *Exposure to the provocative TV content,* is measured with a questionnaire about TV

watching habits – how frequently they watched certain types of "provocative" TV shows and what their attitudes and tendencies toward such content and following celebrities' lives through media were.

Dependent variables: *Beauty standards* (praising Natural look vs. praising internalised provocative standards for female beauty)[1]. Scores on each question were averaged for Natural and Provocative portraits.

- *Intention to have at least one plastic surgery*
- *Risky sexual behaviour* (how frequently they used preservatives).
- *Pressure adolescents feel about physical appearance, and*
- *Pressure about sexual behaviour*

Other correlates *gender, SES.*

Results

Exposure to the provocative TV content correlates positively to Perceived beauty (r =.26, p<.01) and Attractiveness of provocative prototypes (r =.25, p<.01), as well as to the Desired resemblance to provocative girls (r =.31, p<.01). On the other hand, it correlates negatively to Perceived beauty (r =-.14, p<.05) and attractiveness of naturally looking girls (r =-.20, p<.01). Concerning only additional measures for a female subsample, Exposure to the provocative TV content is negatively correlated to the Anticipated attractiveness of natural girls to men (r =-.18, p<.01).

While Beauty of naturally looking girls is evaluated significantly higher by girls than boys (*t* (283) = -3.99, p<.01), provocative prototypes are perceived as more beautiful by male than female participants.
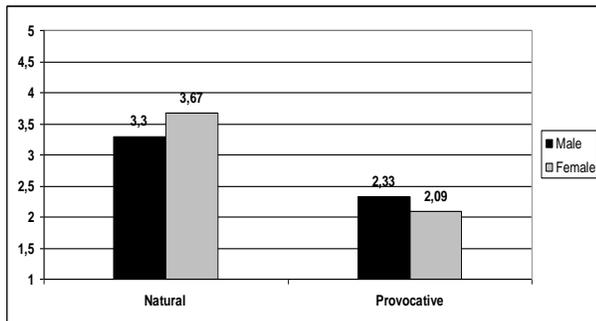

Figure 1: Gender differences in the perceived beauty of natural and provocative girls

When it comes to the attractiveness of natural looking girls, boys show a slight tendency to underestimate it in comparison to female participants (*t*(283) = -2.15, *p* < .05). Regarding attractiveness of provocative prototypes, both girls and boys evaluate it equally (*t*(283) = 1.41, *p* = .16).


Figure 2: Gender differences in perceived attractiveness of natural and provocative girls

While there is no correlation between exposures to the provocative TV content and felt pressure about physical appearance in girls, there is a significant link between these variables in male participants (Table 1).

Table 1: Correlations between Exposure to provocative TV content and felt pressure in boys and girls

Felt pressure about:	Physical Appearance		Sexual Behaviour	
	M	F	M	F
Exposure to the provocative TV content	.22*	.06	.32**	0.02

There is an interesting tendency suggesting that girls feel higher pressure about physical appearance, while boys feel higher pressure concerning sexual behaviour, but differences are only marginally significant (*t* (283) = -1.8, *p* = .07, for physical appearance, and *t* (283) = 1.63, *p* = .1 for sexual behaviour).

When asked about future intentions to do a plastic surgery, 39.7 % of girls responded affirmatively. The most desirable body parts to be changed are lips, nose and gluteus.

Most alarming evidence suggests that those who are more frequently exposed to the provocative TV content show a higher tendency for risky sexual behaviour (r = -.25, *p*<.05). It is important to mention that while there is a significant link between Exposure to the provocative TV content and financial status (r = .21, *p*<.05), there is no significant connection between financial status and tendency towards risky sexual behaviour.

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[1] measured with facets: *How beautiful they considered a girl from the particular photograph, How attractive they considered a girl from the photograph* and 2 additional questions (only for girls): *To what extent they considered particular girl from the photo to be attractive to men* and *To what extent they would like to look like the girl from the photograph*
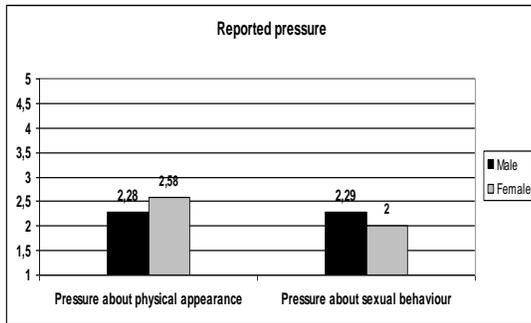
Figure 3: Felt pressure about physical appearance and sexual behaviour

Discussion and conclusions

Although recorded evidence suggests potential detrimental effects that provocative TV content might have on adolescents in terms of risky sexual behaviour and impact on aesthetic values related to felt pressure to look in a particular way, we should not give strong conclusions since the effects are still remarkably slight. Weak correlations might indicate that the examined problem is more complex and involves additional factors which had not been included in the study. Also, it is suggested to examine more prominent media such as social networks which directly changes the cultural context adolescents live in (Davies & Eynon, 2013).

In such as fragile life stage as adolescence, concerns about physical appearance and sexuality may have substantial effects on one's self-confidence, satisfaction, and well-being (Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, 2013). Thus, it is of great importance to understand all the factors responsible for psychological states crucial for one's self-image. The results of our study show that boys and girls are sensitive for different aspects and such findings might originate from cultural context and tradition. Girls have always been taught the importance of physical appearance while boys have been facilitated to initiate sexual activities without being stigmatized. Moreover, the rich sexual life of boys has always been praised. Consequently, boys are more likely to be under the pressure, if they are to fulfil the internalized task to be a "macho" man. With regard to provocative TV content, the more boys are exposed to such content, the more pressure they feel about both physical appearance and sexual behaviour. It could be hypothesized that this is the effect of the content promoted by provocative TV shows which include explicit sexual scenes in which men are dominant and popular initiators. But why are these effects not found in girls? One possible explanation may be that this is the effect of differences in age and pace of biological and sexual development between boys and girls (Arnett, 2012; Flannery, Vannucci, & McCauley Ohannessian, 2018; Santrock, 2014), which could be the focus of future research with the sample of adolescents of various ages. On the other hand, these effects may have occurred due to the differences in male and female role models presented in Reality shows. Men and women in realities act differently, presenting certain gender roles,

which could differently affect adolescent boys and girls (Bandura, 1977). Additionally, the effects on felt pressure among girls may have not been caught due to the possible omission of particular attitudes and behaviours, in the study, which is generally affected by provocative TV content. It would be interesting to investigate how adolescent boys and girls perceive characters from Reality shows and how they value their behaviours.

Effects of TV content on adolescents' beauty standards and behaviour are small but should not be neglected. In the absence of different, positive role models in media it is harder for adolescents to resist pressure and develop positive image of their body and self which can have serious implications for both their development and health (Rousseau, Eggermont, & Frison, 2017; Trekels, Ward, & Eggermont, 2018; Davies & Eynon, 2013).

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Differences in Attachment Patterns in Children of Fallen Soldiers and Their Peers from Complete Families

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Abstract

During and after the war in Bosnia and Herzegovina, women whose husbands died in the war were particularly vulnerable, especially those with very young children, who lost their fathers at an early age. These mothers were exposed to multiple stressors and at risk of developing post-traumatic stress symptoms, which were found to be connected with the formation of disorganized attachment patterns in infants. Having this in mind, the aim of this study was to identify differences in attachment patterns between two groups: a group of young people born between 1988 and 1995 who experienced traumatic loss during the war, and a control group of young people born in that same period but who grew up in complete families without traumatic loss. The results indicate no significant differences between the two groups on the distribution of secure and insecure attachment patterns. However, while the dismissing pattern is dominant in the complete family group, the unresolved attachment pattern prevails in the group of children of fallen soldiers. Additionally, this group was found to have more unresolved-specific markers which point to the existence of unresolved loss. These findings are in line with the theories of the formation of unresolved attachment.

Keywords: attachment, loss, trauma, war

Introduction

It has been more than two decades since the war in Bosnia & Herzegovina (1992–1995) ended, but its consequences are still clearly visible. Human loss is the most tragic of these consequences, one with an enduring impact on an entire generation of youth who grew up without a father. Families with infants born shortly before or during the war, who lost their fathers at such an early age, were particularly vulnerable.

Studies have indicated that losing a parent during early childhood is associated with infant attachment disorganisation (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005; Main et al., 1985, as cited by Lyons-Ruth & Jacobvitz, 2008).

Emotionally overwhelming and traumatizing experience such as losing a partner (Stroebe & Stroebe, 1987), along with continuous feeling of fear and despair of being a single parent of a small child in war times (Murphy, Rodrigues, Costigan, & Annan, 2017), can potentially lead a mother to develop post-traumatic stress symptoms. As a result, traumatized mothers experience difficulties regulating their own arousal and, consequently, difficulties modulating their infant's arousal (Tull, Barrett, McMillan, & Roemer, 2007; van der Kolk, 1994). Furthermore, unresolved loss can cause the mother to exhibit insensitive and frightening behaviours, and thus form a risk factor for the development of disorganized attachment in infants (Ainsworth & Eichberg, 1991; Lyons-Ruth, Bronfman, & Atwood, 1999; Lyons-Ruth & Jacobvitz, 2008; Madigan, Moran, & Pederson, 2006; Main & Hesse, 1990).

In line with these findings, the aim of the study was to explore the differences in attachment patterns between two groups: a) young people who lost their fathers during the war in Bosnia and Herzegovina between 1992 and 1995 and b) young people born in that same period, but who grew up in complete families without traumatic loss.

Method

Participants

The sample consisted of 33 students of the University of Banja Luka, aged 20 to 27 years, 17 of which are children of fallen soldiers, and 16 from complete families without traumatic loss in the family history. All of the participants were born between 1988 and 1995 (aged 0 to 5 at the time of their father's death). All of them lived in Bosnia and Herzegovina during and after the war.

Measures

We used the *Adult Attachment Projective Picture System (The AAP)* (George & West, 2012) to assess the attachment status.

The AAP includes stimulus set of 8 line drawings, 1 warm up and 7 attachment scenes of an individual or attachment dyads (see George & West, 2001). The stimuli-pictures were designed to contain only sufficient detail to elicit attachment mechanism and identify attachment contexts, while all other background elements are ambiguous (see George & West, 2012 for the complete AAP picture stimuli set and description).

Studies provide evidence of the excellent concurrent validity of the AAP with the AAI, test-retest reliability, inter-judge reliability and discriminant validity in healthy controls and clinical patients (Buchheim & Goerge, 2011; Gander, George, Pokorny, & Buchheim, 2016; George & West, 2012, 2001). AAP inter-rater reliability between independent judges showed agreement of 90% ($\varkappa$ = .85, p = .000, n = 144) (George & West 2001, 2012). In our study, interrater reliability between the two judges who coded all the transcripts independently and were blind to the family condition was 92% ($\varkappa$ = .92, p < .001, n = 33)

Procedure

The AAP administration takes about 30 minutes on average. It is done in a private setting and recorded. First, the warm-up stimulus is presented, and then the rest of the stimuli in a precisely determined order. While looking at picture-stimuli, people are being asked a set of standardized prompts: what is happening in the scene, what led up to the scene, what the characters are thinking or feeling, and what might happen next? The AAP interviews are audio-recorded and analyses are done from verbatim transcripts. Each response is coded by a certified AAP coder.

Results

Our results indicate differences in attachment characteristics between the two groups. The most noticeable difference is the predominance of the dismissing attachment pattern in the complete family group (37.5% of participants), while the unresolved attachment pattern is prevailing in the children of fallen soldiers group (47.1% of disorganized participants) (Figure 1). However, differences between the two groups in frequencies of attachment patterns were not statistically significant when considering attachment patterns variations in total (χ^2 (3, N = 33) = 3.42, p = .332, φc = .332).

Further, unresolved-specific markers (for examples of unresolved-specific markers, see Table 1) pointing to the existence of an unresolved loss were found in 47.1% of cases in the group of children of fallen soldiers, compared to only 25% of cases in the control group. Although this difference was not significant (χ^2(1, N = 33) = 1.73, p = .188, φ = .229), the odds of children of fallen soldiers having unresolved-specific markers were 2.9 times higher than the odds of their complete family counterparts having the same markers.
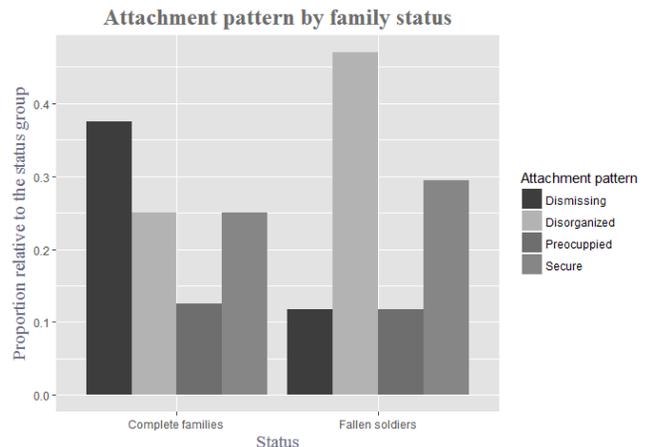
Figure 1. Differences in attachment patterns between children of fallen soldiers' families and children from complete families

Table 1: Cemetery and Ambulance – case examples containing unresolved loss markers.

Cemetery	Ambulance
What is happening in this picture? A man remembers an old friend who's not there anymore. *What led up to this scene?* Death (laughter). *What are the characters thinking or feeling?* He's thinking about how it was great for them once, what they used to do and that's it. *What might happen next?* **That he joins him.** *Anything else?* No.	*What is happening in this picture?* A member of the family has had some accident or a sickness. The ambulance came to get him. *What led up to this scene?* A sickness or an accident of some member of the family. *What are the characters thinking or feeling?* They feel sorry, they are **afraid** a bit, they don't know what will happen to the person that went to the ambulance. *What might happen next?* Nothing. The person went to the ambulance. That's it. He is waiting what will happen next.

Discussion and Conclusion

The main goal of our study was to compare the attachment patterns of children of soldiers who died in the war with the attachment patterns in a group of controls from complete families without traumatic loss. We hypothesized that impaired mother-child interactions can result from the mother's posttraumatic stress symptoms, due to her unresolved loss during highly stressful war times (Ainsworth & Eichberg, 1991; Lyons-Ruth, Bronfman, & Atwood, 1999; Lyons-Ruth & Jacobvitz, 2008; Madigan, Moran, & Pederson, 2006; Main & Hesse, 1990).

Our results indicate that the children of the mothers who were exposed to major traumatic events (tragic loss of a spouse, being a single mother of a young child during the war) tend to demonstrate more disorganised attachment behaviours, specifically in relation to an unresolved loss, although the obtained differences are not statistically significant, probably due to a small sample. Difficulties in regulating negative emotions are seen in the APP transcripts of the fatherless group more than in the transcripts of the control group. In short, our results suggest that young people who lost their fathers in the war in their early childhood had greater chances of developing disorganised attachment patterns in comparison with the control group, although these results must be taken with great caution due to a small sample and no statistical significance.

Our study suffers from few major limitations: small sample size, little information about the mother or the family in general, little demographic information about the participants (only gender and age), the passage of time, etc. Even though we assured that the control group came from complete families without traumatic loss in the family history, it is possible that other factors, such as the mother's emotional stability/instability, personality traits, family dynamics, and availability of family and other support systems, financial situation, etc. could have had important effects on attachment development in all participants. Accordingly, future research is expected to address these questions.

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Influence of Contextual Information on the Estimation of Artistic Paintings

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Abstract

The aim of this research was to examine the relation between the amount of contextual information and the estimation of the artistic and hedonistic value of the artistic paintings from different periods of art. This relation was examined through an experiment with four groups of participants. The first group knew nothing about the paintings, the second knew only the name of the author, the third group knew the name of the author and the description of the painting, and the fourth group knew all these information and the estimated price of the paintings. The data were analyzed using ANOVA. The results have shown that estimation, of both artistic and hedonistic value of the paintings, varies depending on the amount of information given to the participants. All differences were in the favor of the groups with a larger amount of information available to them. These results suggest that a larger amount of information leads to certain changes in the estimation of artistic paintings, for both artistic and hedonistic value of the artistic paintings.

Keywords: estimation, paintings, information, artistic value, art

Introduction

According to Shiv and Fedorikhin (1999) the first process (level) of perception, is an automatic one and based entirely upon affects and affective reactions (Berkowitz, 1993; Shiv & Fedorikhin, 1999; Lazarus & Lazarus, 1994; Wyer, Clore & Isbell, 1999). The second process is an analytic one. It includes affects plus the additional information about the stimuli. The second process, the rational one, interests us in this paper. An important concept for this paper is also Berlyne's concept of the hedonistic value of artistic paintings, routed in Bartlett's concept of "effort after meaning" (Bartlett, 1995). According to Bartlett's concept, individuals make sense of their perception by connecting them with their past experiences (Cupchik, 1992). Effort after meaning can also be linked to the concept of art as message artists send to its audience (Konecni, 1984), according to which, we make sense of art by making a connection between what we see and what we think artists wanted to show us. According to all said, contextual information (for example the price of the painting, color of the painting, the motif of the painting etc…) are important for the perception of artistic stimuli, and many authors examined this role. For example, Leder, Carbon and Ripsas (2006) found that elaborative, more than a descriptive title, of the abstract paintings, increases understanding of those paintings. Swami (2012) found that information relevant to artistic pieces can influence the perception, and lead to their higher understanding, but more for abstract than for representational art. Russel (2003) found that enjoying art

partially depends on the level of its understanding. Martindale, Moore and Borkum (1990) found that people prefer representational art, and explained that this preference comes from the meaningfulness of representational art. Some studies examined the role of specific information in the perception of art. For example, Cleeremans at al. (2016) showed that the name of the author can lead to the higher hedonistic value of paintings, but only for laic public. One study showed that paintings presented alongside with high price were estimated as more likeable from those presented with a lower price (Lauring at al., 2016).

The aim of this research was to examine the role of the amount of information on the hedonistic and artistic value of artistic paintings, and to determine which of these information (detailed description of the paintings, role of the name of the author and of the estimated price of the paintings) are most important ones for the estimation of paintings.

Method

Instruments

In order to investigate estimation of the artistic and hedonistic value of the paintings, participants were given two questions in form of semantic differential, generated for the purposes of this research, one question regarding the hedonistic value of the paintings, and the second regarding their artistic value. Participants answered questions during exposition of the artistic paintings.

Stimuli

Stimuli presented to the respondents were 14 artistic painting ranging from Renaissance through Impressionism to the Modern art. Only paintings from authors, who were recognized by most of the participants from the pilot sample, were included in this research. These authors were: Da Vinci, Rembrandt Van Rijn, Manet, Van Gogh, Picasso, Dali and Malevich. Two paintings were presented by every author.

Sample

The sample was convenient and it consisted of 82 students, both genders (M = 7; F = 75), average age = 19.58. In each group, there was nearly the same number of participants (N1 = 20; N2 = 21; N3 = 21; N4 = 20). Participants were deployed in one of four groups randomly
.

Procedure

The relation between the amount of information and estimated artistic and hedonistic value of the paintings was examined through an experiment with four groups of participants. In the first group, participants rated the artistic and hedonistic value of the paintings while not knowing anything about them. In the second group, they knew the only name of the painting's author. In the third group, they knew the name of the author, the name of the painting and its description (detailed information about the motif and meaning of the painting from the perspective of the author). In the fourth group, participants had all previously mentioned information, plus the estimated price of the paintings (presented in American dollars).

Results

The data was analyzed using program SPSS, version 20. The data were analyzed using Analysis of Variance (ANOVA). Independent variable was the group in which participants were deployed, while dependent variables were the estimated artistic and hedonistic value of the paintings.

Table 1: Differences between groups

Variable	df	F	p
Hedonistic value	3	5.603	.001
Estimated artistic value	3	7.224	.000

From table 1, we see that there are statistically significant differences between groups of participants with different amount of information on both dependent variables.

Table 2: Post hoc for Hedonistic value

Group		M	p
N1	N3	-.728	.001
N2	N3	-.537	.000

Note: N1 – No information; N2 – Name of the author;N3 – Name of the author and description of the paintings

From table 2, we see that participants from first and second group differ from the participants from the third group. While the first and second group don't differ one from another. More precisely, participants from the group with a larger amount of information found paintings to be more likeable.

Table 3: Post hoc for estimated artistic value

Group		M	p
N1	N3	-.356	.041
	N4	-.542	.000

Note: N1 – No information, N3 – Name of the author and description of the painting; N4 – Name of the author, description of the painting and price

From table 3, we see that participants who knew more about the paintings attribute higher artistic value to them from those who knew nothing about the paintings.

Discussion and conclusions

From the results it can be seen that results from previous studies were partially confirmed, more information lead to higher hedonistic and estimated artistic value of the paintings, but not all information was found to be relevant. It should be stated that previous studies examined the relationship between only one of the mentioned information (name of the author, description and the price), so, in order to see which information is the most relevant one for the estimation of hedonistic and artistic value of the paintings, all previously mentioned information was included in this research. Also, this study differed hedonistic from the artistic value of the paintings, which previously mentioned studies didn't do.

When it comes to a detailed description of the paintings, results from previous studies were confirmed (Leder, Carbon & Ripsas, 2006), for both artistic and hedonistic value of the paintings. This research did not confirm results from previous studies regarding the role of the name of the author (Cleeremans at al., 2016), neither for hedonistic nor for artistic value. It is possible that name of the author is less important, for the estimation of the paintings, from the detailed description of the paintings and information about price, and because of that its effect was found in the study which included only this information, but not in this research, which included also other types of information. The role of the price of the paintings found in earlier research (Lauring at al., 2016) was partially confirmed. Estimated price was found to be important for the estimated artistic value of the paintings, but not for their hedonistic value. It is possible that the description of the painting is more important information to hedonistic value, while information about the price is important for the estimated artistic value of the paintings.

The general conclusion is that the amount of information has an influence on the estimation of paintings, and it seems that detailed description is the most important information, because it effects estimation of both hedonistic and artistic value, while the name of the author isn't important for any of those.

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Validation of Hedonic and Eudaimonic Motivation Scale for Watching Movies

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Abstract

Motives for watching movies are not studied very much in the former Yugoslavia region and there is no satisfactory scale to measure this kind of motives. This study presents an insight into the preliminary psychometric characteristics of Hedonic and Eudaimonic Motivations Scale (Oliver &; Raney, 2011) translated into the Serbian language. A survey was conducted on a sample of 200 students of the University of Banja Luka. Confirmative factor analysis is performed in the program *Lavaan* for R. DWL Procedure has been used for extraction of factors. The initial "fit" (correlated) two-factor of the model has been shown and the factor's saturation is moving in the range from .459 to .902 for the dimension of hedonic motivation, and from .727 to .912 for the scale of eudaimonic motivation. However, the presence of a large number of increased correlations of residuals was found for three items (two within hedonic and one within the eudaimonic scale) which have been removed from further analysis. The new two-factor solution had more adequate "fit" indexes than the initial one; and factors' saturation ranged from .767 to .916 for the scale of hedonic motivation, i.e. .734 to .917 for the scale of eudaimonic motivation. Correlation between factors was -.260. The reliability of the internal consistency for both factors and the proportions of average variance extracted (AVE) was generally high: 1) Hedonic motivation scale: Cronbach α = .908, McDonald ω_3 = .893, AVE = .718; 2) Eudaimonic motivation scale: Cronbach α = .922, McDonald ω_3 = .916, AVE = .719. We can conclude that this scale measures two types of motivation that are not the bipolar ends of one dimension, but rather independent factors and that for this sample, the scale shows satisfactory psychometric characteristics.

Keywords: movie, hedonic motives, eudaimonic motives

Introduction

Beside work duties and family responsibilities, the media are an essential part of everyday life now. Thanks to the modern development of science and technology, there is a powerful transfer of large amounts of information in a very short period of time thus allowing an average viewer to have access to information in modern forms within different areas of human activity: politics, entertainment, sports. In fact, one of the most popular media such as television is the most powerful media where all the processes necessary for communication in a modern society are played, ranging from politics and business to sports, arts and entertainment.

However, the essential question of interest for this study certainly is what the motives for film content preference are. One of the major motives for consuming media contents is the viewers' experiencing emotions, especially with the contents such as entertainment, art, fiction, news, advertising or commercials (Bartsch, Mangold, Viehoff, & Vordere, 2006)

Although general attitude is that viewers select a movie or media contents for pleasure (Oliver & Rainey, 2011), the viewers are however motivated to consume different media for a variety of reasons: entertainment or pleasure: surveillance / information; personal relationships / social interaction and integration; personal identity, diversion/escapism (Rugiero, 2000). Two primary groups of motives are hedonic motives, which means achieving pleasure and avoiding pain; and eudaimonic motives, i.e. search for cognitive gratification linked to introspection, reflection on the nature of human existence, the dynamics of the relationships between persons, the search for truth, and the meaning of life (Igartua & Barrios, 2013)

Method

The primary problem of this research is to test preliminary psychometric characteristics of Hedonic and Eudaimonic motivations scale (Oliver & Raney, 2011) translated into the Serbian language. The sample consisted of 200 students of the University of Banja Luka (82% female). Because this research was preliminary, we used the Hedonic and Eudaimonic motivations scale and Serbian Adaptation of the Positive and Negative Affect Schedule (PANAS). For structural validation we used Confirmatory Factor Analysis (CFA) performed in *lavaan* (Rosseel, 2012) for R. Extraction method we used was DWLS.

Results and discussion

Confirmatory Factor Analysis (CFA) was performed in *lavaan* (Rosseel, 2012) for R. The DWLS extraction method was used. For the estimation of the model fit, the following model fit indices were used: Comparative Fit Index (CFI) / Non-Normed Fit Index (NNFI) / Tucker-Lewis Index (TLI)$\geq$ 95, Root Mean Square Error of Approximation (RMSEA)$\leq$.06 (Hooper, Coughlan, & Mullen, 2008) and Standardized Root Mean Square Residual (SRMR) $\leq$ .08 (Hi & Bentler, 1999). The initial fit (correlated) two factor model was: $\chi^2(53) = 323.14$, $p < .001$; CFI = .947, TLI = .934, SRMR = .127, RMSEA = .160, 90% CI [.144, 177]. Factor saturations (Λ) ranged from .459 to .902 for Hedonic factor and from .727 to .912 for Eudaimonic factor. However, the presence of a large number of correlations of residuals (Reise & Revicki, 2014), was found on items 1 ("Važno mi je da se

zabavljam kada gledam film"), 2 ("Smatram da se može uživati čak i u jednostavnim filmovima dok god su zabavni"), and 12 ("Moja omiljena vrsta filmova su oni koji me tjeraju na razmišljanje") with other items (and / or between themselves). Specifically, the number of residual correlation pairs over .20 | for item no. 1 was 6, for item no. 2: 6 and for item no. 12: 4. After these items were removed, a much better fit was achieved than in the original two factor solution: $\chi^2(26) = 70.79$, $p < .001$; CFI = .989, TLI = .985, SRMR = .057, RMSEA = .093, 90% CI [.067, .119]. Correlation between factors was -.260. Compared with the initial research, two factor model in this study had a better model fit (Oliver & Raney, 2011). The reliability of the internal consistency for both factors and the proportions of the extracted common variance (AVE) were generally high: 1) Hedonic: Cronbach α = .908, McDonald ω_3 = .893, AVE = .718; 2) Eudaimonic: Cronbach α = .922, McDonald ω_3 = .916, AVE = .719 (Zinbarg, Revelle, Yovel, & Li, 2005). Factor saturations are shown in Table 3.

Table 1: *Results of confirmatory factor analysis (factor loadings)*

No. of item	Item	λ
Hed 3	Za mene su najbolji oni filmovi koji su zabavni	0.799
Hed 4	Moja omiljena vrsta filmova su veseli i pozitivni filmovi	0.899
Hed 5	Volim filmove koje bi drugi mogli smatrati "luckastim" ili "plitkim" ako mogu da me nasmiju i dobro zabave	0.767
Hed 6	Volim filmove koje bi drugi mogli smatrati "luckastim" ili "plitkim" ako mogu da me nasmiju i dobro zabave	0.916
Eud 7	Volim filmove koji me navode na preispitivanje svog pogleda na svijet	0.847
Eud 8	Volim filmove koji me tjeraju da više razmišljam	0.895
Eud 9	Volim filmove koji nose duboka značenja ili poruke	0.917
Eud 10	Volim filmove koji se fokusiraju na značajna ljudska stanja	0.836
Eud 11	Veoma me dirnu filmovi koji govore o ljudskoj potrazi za boljim razumevanjem u životu	0.734

Table 2: *Descriptive statistics and coefficients of internal consistency*

Scale	N	M	SD	Sk	α	ώ
Hedonic	6	4.75	1.55	-.37	.85	.86
Eudaimonic	6	5.96	.94	-.87	.90	.91
Pos. Affect	10	34.55	5.43	-.76	.81	.82
Neg. Affect	10	20.56	6.40	.68	.86	.86

N – Number of items

Results of descriptive statistics indicate that the respondents had the tendency towards higher scores on all subscales except for the subscale of negative affect where the respondents achieved lower results. Table 2 shows the Alpha and Omega coefficients of internal consistency. Both coefficients of internal consistency indicate the acceptable reliability of all used subscales (McDonald, 1999 by Dunn, Baguley, & Brunsden, 2014).

A t-test for independent samples was also performed with the aim of identifying potential gender differences on all the subscales used. The results show that there are no statistically significant gender differences in the hedonic motive subscale ($t(194) = -1.88$, $p = .06$), on the subscale of eudaimonic motive ($t(194) = -1.34$, p = .18), on the subscale of positive affect ($t(194) = 1.18$, p = .24) and on the subscale of negative affect ($t(194) = .14$, $p = .88$). These results are consistent with the results of initial research (Oliver & Raney, 2011). Unlike Oliver and Ranley's research, we found statistically significant differences between subjects in relation to hedonic and eudaimonic motivation, but the respondents achieved higher results on the eudaimonic scale than in the hedonic scale ($t(199) = -8.52$, $p < .001$, $r = -.23$).

Table 3: *Correlation results*

	Hedonic	Eudaimonic	Posi. affect	Neg. affect
Hedonic		-0.23	0.11	-0.21
Eudaimonic			0.12	0.08
Posi. affect				-0.29

*p < .01

The statistically significant correlation was identified between the subscales of motives, which is in line with previous research (Oliver & Raney, 2011). While the Eudaimonic motive scale is not statistically significant in relation to positive and negative affects, the hedonic motive scale is in statistically significant negative small effect correlation with negative affect (Cohen, 1988, Cumming, 2012). Also, the expected correlation between negative and positive affect was also obtained (Schmukle, Egloff, & Burns, 2002).

Conclusion

The results obtained for this sample indicate satisfactory psychometric characteristics of the Hedonic and Eudaimonic

Motivations Scale. Also, the saturation of item in groups of hedonic and eudaimonic motivation is satisfactory, and the items were grouped according to attaining characteristics of the hedonic and eudaimonic motions. This scale measures two types of motivation that are not the bipolar ends of one dimension, but rather independent factors.

For further research, it is recommended that the investigation is carried out on a larger research sample, and to establish the existence of a correlation between scores of hedonic and eudaimonic scales and some other variables (age, gender).

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Divergent thinking between personality and cognition: The role of verbal fluency, working memory and executive functioning

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Abstract

Little is known how divergent thinking (DT) components (fluency, flexibility, originality and elaboration) are related to personality traits and cognitive abilities, while the link between DT and cognitive abilities is generally still unclear. The aim of this study was to explore if different components of DT may be predicted by some important cognitive variables over and above personality factors. 181 participants completed Alternative uses task, based on which four components of DT were calculated. Big Five personality traits, verbal fluency, working memory, the speed of visual search/mental processing and executive functioning were also assessed. For every DT component, a hierarchical regression analysis was performed, with personality traits in the first step and cognitive abilities in the second. Our results showed that high Openness to experience is the most robust predictor of various DT components, while low Agreeableness turned out to be also significant. Cognitive abilities such as verbal fluency, working memory and speed of visual search and processing turned out to be important predictors of DT components besides personality traits. Components like fluency, originality and flexibility may be more representative of creativity, compared to elaboration.

Keywords: divergent thinking, creativity, cognitive abilities, openness to experience, originality

Introduction

Creativity is frequently defined as the creation of an idea or a product, which is both new and useful (Barron, 1955; Mumford, 2003). In Guilford's Structure of Intellect theory, divergent thinking (DT) is seen as the basis of creativity (Guilford, 1968) and implies finding as many original and unusual solutions as possible, while convergent thinking involves seeking for one correct answer to a problem (Runco & Acar, 2012). According to Guilford, there are four components of divergent production: fluency, flexibility, originality and elaboration (Runco & Acar, 2012). Fluency refers to a number of produced answers, originality is defined in terms of new and unusual responses, and flexibility implies the diversity of ideas and the variability of conceptual categories, while elaboration refers to the level of description of a particular idea (Runco & Acar, 2012).

Relatively consistent results are provided regarding the link between DT and personality, showing that Openness to experience is the most important predictor of creativity (Furnham & Chamorro-Premuzic, 2004). Previous research has shown that creativity is positively related to Extraversion and Openness to experience, but negatively to Conscientiousness (Furnham et al., 2008; King, McKee Walker, & Broyles, 1996; Wolfradt & Pretz, 2001). A meta-analysis reviled that creativity correlates positively with Neuroticism, Extraversion and Openness, but negatively with

Agreeableness and Conscientiousness (Feist, 1998). However, the relationship between DT and cognitive abilities is less clear. Some results indicate that there is a low positive correlation between intelligence and creativity (Batey & Furnham, 2006; Batey, Chamorro-Premuzic, & Furnham, 2009; Furnham et al., 2008; Kim, 2005; Richards, 1976; Torrance, 1967). On the other hand, in a well-known study by Wallach and Kogan (1965) the correlation between these variables was not detected. However, Silvia (2008) had analyzed the data collected by Wallach and Kogan using a latent variable analysis and founded a modest, but the statistically significant correlation between creativity and cognitive abilities.

Although many previous studies focused on DT in the context of personality and cognition, little is known how four specific components of divergent thinking are related to cognitive factors and personality traits. Moreover, it is not clear whether cognitive abilities may be important predictors of various divergent thinking components, besides personality. Therefore, the aim of our study was to explore if different components of DT may be predicted by some important cognitive variables over and above personality factors.

Method

Participants

The research was conducted on a student sample consisting of 181 participants (female = 87.3%; M age = 20.09, SD = 2.19). Before taking part in the study, all individuals signed an informed consent. All participants were tested individually.

Instruments

Alternative uses task (Kvaščev, 1975). This task, originally formulated by Guilford and his colleagues, nowadays represents one of the most famous tests of DT. Participants were asked to list as many possible uses for a brick in a time-limited setting (2 minutes). Based on this task, four components of DT - fluency, flexibility, originality and elaboration were calculated. Fluency was defined as the total number of responses, flexibility referred to the number of different categories, elaboration included the number of details for every response, while originality was defined as the uniqueness. Answers given in only 5% of the cases were considered unusual, while those given in only 1% were considered unique (Dow, 2003).

Big Five Inventory (BFI: John, Donahue, & Kentle, 1991). This self-report inventory was used for the assessment

of the Big five dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to experience. BFI consists of 44 items, presented on a 5-point Likert scale. In this study, the Cronbach's α coefficient for different subscales varies from .77 to .85.

Phonemic fluency task (Pavlović, 2003). Verbal fluency was assessed using Serbian adaptation of FAS phonemic fluency task. Verbal fluency involves the updating ability (Sako et al., 2014), and correlates highly with fluid intelligence (Roca et al., 2012). This task shows sensitivity to the frontal lobe functions, in particular, the prefrontal left area (Alvarez & Emory, 2006). Participants were instructed to list as many words as possible starting with letters S, K, and L (60 seconds for each). The total score is expressed as the sum of correct answers given for all three letters.

Digit span subtest from VITI (Berger, Marković & Mitić, 1994). Digit span task (Forward and Backward) from VITI, Serbian adaptation of WAIS, was applied for the assessment of short-term verbal memory, a range of attention for verbal information (Groth-Marnat, 2003) and a working memory capacity - a cognitive function that provides temporary storage and manipulation of information in consciousness (Baddeley, 1990). Reliability of the subtest according to Spirman-Braun and Cronbach's alpha is .84 (Berger et al., 1994).

Trail Making Test (TMT: Reitan, 1955; 1958). This instrument was developed in order to detect cognitive dysfunction due to organic brain damage. The test consists of two parts: set A, which measures the speed of visual search and mental processing, perceptive and motor speed (Sanchez-Cubillo et al., 2009) and set B, which activates executive functions and working memory (Lezak, 1995; Mitrushina et al., 2005; Strauss, Sherman, & Spreen, 2006). Set A contains numbers from 1 to 25 that are randomly arranged in circles on a sheet of paper. The respondents are asked to connect the numbers in a naturally growing sequence, as quickly as possible. Set B includes randomly assigned numbers from 1 to 12 in gray circles and numbers from 1 to 13 in white circles. Participants again need to connect numbers in a growing sequence, but this time according to the rule: 1 white circle – 1 gray circle – 2 white circle – 2 gray circle and so on. In both sets, the measure of achievement was the time expressed in seconds, needed to complete the task.

Nusbaum and Silvia (2011) consider that the phenomenon of divergent thinking can be seen from the perspective of the executive abilities - cognitive functions that enable a person to determine goals, formulate effective strategies, to follow, be flexible, and adapt to new circumstances. These authors assume that executive functions could have a significant relationship with a creative ideation. Therefore, we decided to apply those cognitive tests which are frequently used for the assessment of executive functioning.

Results

Table 1 shows descriptive statistics and Pearson correlation coefficients for all variables in the study.

Table 1: Descriptive statistics and Pearson correlations for all variables in research.

Variables	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
DT Fluency (1)	5.93	2.40												
DT Flexibility (2)	4.17	1.66	.75**											
DT Originality (3)	6.09	3.67	.88**	.81**										
DT Elaboration (4)	4.89	2.87	.36**	.47**	.43**									
Extraversion (5)	28.26	6.30	.05	.11	.09	.05								
Agreeableness (6)	34.81	5.67	-.08	-.09	-.14	-.11	.29**							
Conscientiousness (7)	30.57	5.97	.03	.04	-.00	.00	.34**	.30**						
Neuroticism (8)	23.12	6.13	-.02	-.13	-.04	-.09	-.43**	-.22**	-.27**					
Openness (9)	37.09	6.72	.26**	.24**	.28**	.02	.20**	.16*	.11	-.07				
Verbal fluency (10)	35.60	7.92	.29**	.25**	.28**	.15*	.04	-.06	-.05	.03	.09			
Digit span (11)	15.18	3.16	.02	.02	-.02	.01	.08	.10	-.02	-.09	.16*	.21**		
TMT-A (12)	28.38	10.69	-.12	-.18*	-.18*	-.12	-.08	-.03	.00	.06	-.05	-.17*	-.17*	
TMT-B (13)	38.66	15.15	-.06	-.10	-.08	-.09	-.04	.04	.08	-.06	-.07	.04	-.13	.50**

Note. * *p* < .05, ** p < .01, TMT-A – speed of mental processing, TMT-B – executive functioning.

Four hierarchical regression analyses were performed. In each regression model, the criterion variable was one of the four DT components. Predictor variables were the same in all regression models – personality traits were entered in the first and cognitive abilities in the second step. Table 2 shows that for DT fluency hierarchical regression analysis yields statistically significant model in the first step, $F(5,175) = 3.36$, p < .01, with Openness as the only significant predictor.

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The second set of variables led to a statistically significant increase in prediction, $\Delta R^2 = .08$, $p < .01$, $R^2 = .16$, with verbal fluency being an additionally significant predictor.

Table 2: Hierarchical regression analysis for variables predicting DT fluency.

Model		Predictors	β	t	p
1	F (5, 175) = 3.36	Extraversion	.02	.18	.85
	R=.30	Aagreeableness	-.15	-1.91	.06
	p < .01	Conscientiousness	.04	.47	.64
	$R^2 = .09$ (9%)	Neuroticism	-.02	-.21	.84
		Openness to experience	**.28**	**3.74**	**.00**
2	F (5, 175) = 3.72	Extraversion	-.01	-.12	.91
	p < .001	Aagreeableness	-.12	-1.64	.10
	R = .40	Conscientiousness	.05	.65	.51
	$R^2 = .16$ (16%)	Neuroticism	-.03	-.40	.69
	$\Delta R^2 = .08$	**Openness to experience**	**.26**	**3.53**	**.00**
	p(ΔF) < .01	**Verbal fluency**	**.26**	**3.57**	**.00**
		Working memory capacity	-.07	-1.01	.31
		Speed of mental processing	-.07	-.81	.42
		Executive functioning	-.02	-.29	.77

For DT flexibility, $F(5,175) = 3.80$, $p < .01$, high Openness and low Agreeableness turned out to be significant predictors in the first step, while in the second step statistically significant increase in explained variance occurred, $\Delta R^2 = .08$, $p < .01$, $R^2 = .17$, with high verbal fluency being additionally significant predictor (Table 3).

Table 3: Hierarchical regression analysis for variables predicting DT flexibility

Model		Predictors	β	t	p
1	F(5, 175) = 3.80	Extraversion	.05	.61	.54
	R = .31	**Aagreeableness**	**-.18**	**-2.33**	**.02**
	p < .01	Conscientiousness	.02	.27	.79
	$R^2 = .10$ (10%)	Neuroticism	-.12	-1.55	.12
		Openness to experience	**.25**	**3.33**	**.00**
2	F(5, 175) = 4.01	Extraversion	.02	.28	.78
	p < .001	**Aagreeableness**	**-.16**	**-2.07**	**.04**
	R = .42	Conscientiousness	.04	.47	.64
	$R^2 = .17$ (17%)	Neuroticism	-.14	-1.78	.08
	$\Delta R^2 = .08$	**Openness to experience**	**.23**	**3.14**	**.00**
	p(ΔF) < .01	**Verbal fluency**	**.23**	**3.15**	**.00**
		Working memory capacity	-.09	-1.22	.22
		Speed of mental processing	-.11	-1.33	.18
		Executive functioning	-.06	-.67	.50

In Table 4 we can see that originality in the first step was significantly predicted by high Openness and low Agreeableness, $F(5,175) = 3.42$, $p < .01$. Second step led to statistically significant increase in explained variance, $\Delta R^2 = .08$, $p < .01$, $R^2 = .17$; lower working memory and high speed of visual search and processing turned out to be additionally significant predictors.

For elaboration, statistically significant model was not obtained not in the first, $F(5,175) = 1.02$, $p = .41$, neither in the second step of regression analysis, $F(5,175) = 1.23$, $p = .28$.

Table 4: Hierarchical regression analysis for variables predicting DT originality.

Model		Predictors	β	t	p
1	F(5, 175) = 3.42	Extraversion	.14	1.67	.10
	R = .30	**Aagreeableness**	**-.19**	**-2.39**	**.02**
	p < .01	Conscientiousness	-.08	-1.02	.31
	R^2 = .09 (9%)	Neuroticism	-.01	-.08	.93
		Openness to experience	**.21**	**2.90**	**.00**
2	F (5, 175) = 3.82	Extraversion	.12	1.46	.14
	p < .001	**Aagreeableness**	**-.17**	**-2.18**	**.03**
	R =.41	Conscientiousness	-.08	-1.03	.30
	R^2 = .17 (17%)	Neuroticism	-.02	-.21	.83
	Δ R^2 = .08	**Openness to experience**	**.22**	**3.00**	**.00**
	p(ΔF) < .01	Verbal fluency	.14	1.87	.06
		Working memory capacity	**-.17**	**-2.31**	**.02**
		Speed of mental processing	**-.21**	**-2.50**	**.01**
		Executive functioning	.00	.05	.96

Discussion

Our results showed that certain cognitive abilities may be important predictors of DT components besides personality traits. It seems that different components of DT do not imply the same cognitive processes – verbal fluency is more relevant for DT fluency and flexibility, while the higher speed of mental processing and weaker working memory are related to originality.

It turned out that higher phonemic fluency significantly predicts both DT fluency and flexibility, meaning that these components of DT require general verbal functioning, verbal ability in the form of language processing (Whiteside et al., 2015), as well as executive control processes (Fisk & Sharp, 2004). This result is quite expected, given that the Alternative uses task is verbal in its nature. Moreover, our research shows that a higher speed of visual search and mental processing significantly predicts originality. It is reasonable to assume that the higher speed of mental processing allows individuals to access ideas relevant to creative thinking in a more efficient way (Kwiatkowski, Vartanian, & Martindale, 1999). An interesting and less expected result refers to the finding that the weaker working memory capacity seems to be related to greater originality. This result is not in accordance with some previous studies (Süß et al., 2002), although some authors obtained similar findings, indicating that lower capacity of working memory might be related to greater creativity (Fugate, Zentall, & Gentry, 2013). It may be assumed that wider focus of attention (i.e. distractibility) can be useful in the process of creative thinking (Fugate et al., 2013), as it may enable a better access to remote associations. Perhaps this supposed poorer retention of information in working memory might be the result of the possibility that new content enters more easily into the consciousness of creative individuals (Carson, 2011). However, this result should be interpreted with caution, having in mind that a suppression effect in regression might have occurred (Pandey & Elliott, 2010). As we checked for this effect, it turned out that suppression is very probable, so the prediction of originality by lower working memory capacity might not be genuine.

With respect to personality traits, the results of our study are mostly consistent with the previous findings which have shown that Openness to experience is the most important predictor of divergent thinking (Furnham, 1999; Furnham & Chamorro-Premuzic, 2004; King et al., 1996). It turned out that low Agreeableness is a relevant predictor of DT flexibility and originality, probably due to the nonconformist and individualistic attitude of creative persons.

There might be some reciprocity between Openness to experience and cognitive mechanisms – perhaps creative individuals are open to new ideas due to the fact that they cannot effectively filter irrelevant information (Batey & Furnham, 2008).

Finally, it seems that components like fluency, originality and flexibility may be more representative of creativity, compared to elaboration. While first three DT components are highly intercorrelated and significantly predicted by some creativity-related personality traits and cognitive abilities, the only elaboration manifests weaker correlations with other DT components and is significantly predicted by none of the variables in the regression model.

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The aesthetic aspect of congruence between music and abstract paintings

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Abstract

The purpose of the present study was to investigate the effect of congruence between music and paintings on the aesthetic preference of paintings. Congruence was specified as the similarity in perceived *regularity* and *complexity* of jazz compositions and abstract paintings (the ratings of regularity and complexity in both sets of stimuli were obtained in the Pilot study). In the main experiment, 32 participants rated the aesthetic preference of the paintings with the congruent, incongruent and no-music background. In addition, they rated the music-paintings matching (how well the music goes with the painting). The effect on perceived matching was significant: matching was higher in the congruent compared to the incongruent condition. The results show no effect of congruence on the aesthetic preference of paintings. These findings suggest that congruence has a strong effect on the perceptual aspect of music-paintings compatibility (visuoauditory similarity) and no effect on the affective aspect (hedonic similarity).

Keywords: music, abstract paintings, congruence, aesthetic preference

Introduction

The cross-modal interaction between different sensations came into the focus of the researchers predominantly inspired by the phenomenon of synesthesia. However, later studies have demonstrated that not only people with synesthesia have strong associations between two or more sensory modalities, but there are also similar matching patterns in the general population. There is frequent evidence which shows that certain melodies are repeatedly associated with particular colours. While "sad" music evokes associations of blue, "happy" music is usually associated with yellow (Lindborg & Friberg, 2015; Palmer, Schloss, & Prado-Leon, 2012). The emotional congruence of multimodal stimuli has also been discovered in various neurophysiological studies (Baumgartner, Lutz, Schmidt, & Jäncke, 2006; Gerdes, Wieser, & Alpers, 2014). When it comes to congruence between music and visual art, some substantial findings suggest that specific artistic genres of music, on one hand, and paintings, on the other hand, are perceived as an optimal match in comparison to other combinations. Moreover, this congruence/compatibility between genres of multimodal stimuli influences the increase in aesthetic preference of a particular stimulus. For instance, paintings of Kandinsky are preferred more while jazz music is playing in the background, whereas William Turner's paintings are significantly more preferred when exposed together with Classical music (Koning & van Lier, 2013). One study has shown that figurative paintings, in general, are perceived as more pleasant while followed by classical music in the background. On the contrary, abstract paintings are considered more pleasant when presented together with jazz music. Additionally, paintings are evaluated as more pleasant in conditions with music, regardless of the genre, in comparison to neutral conditions (in silence) (Actis-Grosso, Daneyko, & Zavagno, 2016). In order to better understand the pattern of cross-matching in two different modalities of art, it is necessary to identify crucial mutual elements which determine the genre per se. One of the possible explanations may lie in objective features of the stimuli. Perceived compatibility between genres might have been explained by a direct match in uncontrolled variables such as the tempo of compositions, number of melodic changes and instruments, on the one side, and colours, number of elements and their dynamics in the painting, on the other side. Not only could elements be the main factor of a certain match, but also their combinations which build the structure of the piece of art. While figurative art in terms of representations of reality and classical compositions have comprehensible meanings and clear structure, jazz and abstract art can be described as unique, improvised, without clear structure and often with idiosyncratic visual representations. Also, some genres can be matched taking into account their familiarity. Those which are more prominent in one's experience are probably encoded in a similar way which later facilitates their pairing. Thus the purpose of this study is to examine the mutual aesthetic dimensions that might build the percept of congruence between music and paintings, and how such congruence affects the aesthetic preference of paintings.

Aims of the study

The main purpose of the study is to investigate the differences in aesthetic preference of paintings in congruent and incongruent multimodal conditions, as well as the main effects that the presence of music can have on the aesthetic preference of paintings. Congruent/incongruent conditions were specified by matching visual and auditory stimuli with similar/different ratings on dimensions Regularity and Complexity.

Method: Pilot study

In order to create (in)congruent groups of multimodal stimuli based on regularity and complexity, 35 students of Psychology rated 71 abstract paintings and 36 jazz excerpts on the four 7-step bipolar scales (cf. Marković, Janković, & Subotić, 2002):

Evaluation: Unpleasant-Pleasant
Complexity: Simple-Complex
Regularity: Unbalanced-Balanced
Familiarity: Unfamiliar-Familiar

Stimuli chosen for the final study were classified in 4 groups: low regularity-low complexity, low regularity-high complexity, high regularity-low complexity and high regularity-high complexity. Groups were balanced in familiarity and evaluation.

Method: Main study

Participants

32 students participated in the experiment.

Stimuli

32 abstract paintings and 8 one-minute jazz compositions were classified in 4 groups by preliminary scores on Regularity and Complexity. Groups of the stimuli were perceived as equally pleasant and familiar.

Procedure

Participants were asked to rate paintings: 1. Simultaneously exposed with congruent music (i.e. paintings and music had similar ratings on Regularity and Complexity), 2. Simultaneously exposed with incongruent music (i.e. paintings and music had different ratings on Regularity and Complexity), and 3. In neutral conditions (without music). Four paintings were exposed per one composition, each in the duration of 5 seconds. After the removing the painting from the screen, participants rated the aesthetic preference for the painting, perceived regularity and complexity of the painting, as well as perceived correspondence between the music and the painting exposed together (only in multimodal conditions). The second part of the experiment included ratings of the same, randomized paintings in the silence. The order of the experimental phases was counterbalanced between subjects. Different sets of paintings were used in either congruent or incongruent condition. In other words, participants did not observe the same paintings in two conditions. In addition, both sets of paintings were rated in silent condition.
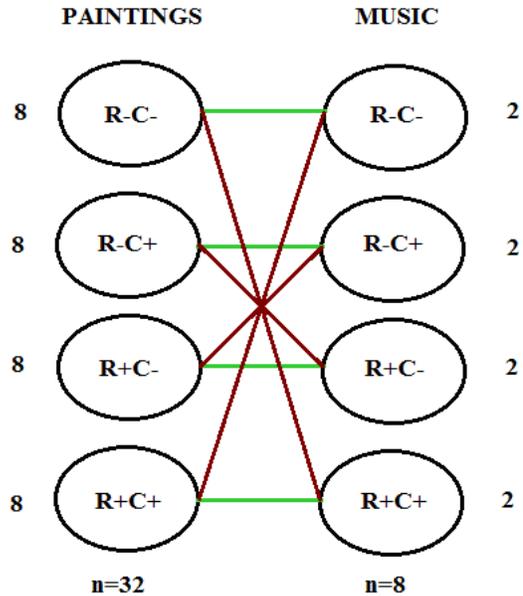

Figure 1: Four groups of visual and music stimuli based on Regularity and Complexity; Green (parallel) lines represent congruent matchings; Crosswise links represent incongruent conditions.

Results

Congruence of music and paintings does show effects on the perception of correspondence between music and paintings ($t(30) = -3.25$, $p < .01$). Correspondence between two art modalities is perceived as higher in the congruent situations.
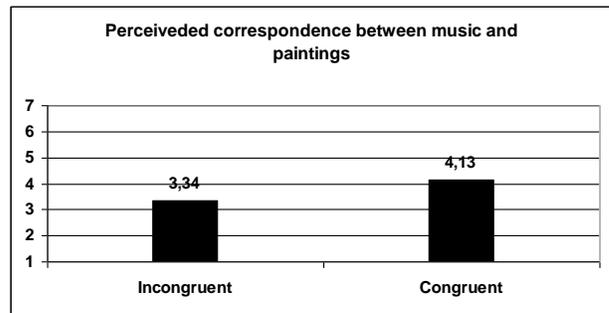

Figure 2: Perceived correspondence between music and paintings in congruent and incongruent conditions

However, the main effect of music has not obtained. There are no differences in aesthetic preference of the paintings when exposed with and without music ($t(31) = 0.71$, $p = .48$). The paintings exposed with congruent music are equally evaluated on the aesthetic preference in silence. Similarly, the paintings exposed with incongruent music are equally evaluated in the silence. The aesthetic preference of paintings is the same in all situations (congruent/ incongruent/control for both groups of multimodal stimuli) ($F(3;15) = 0.34$, $p = .79$).
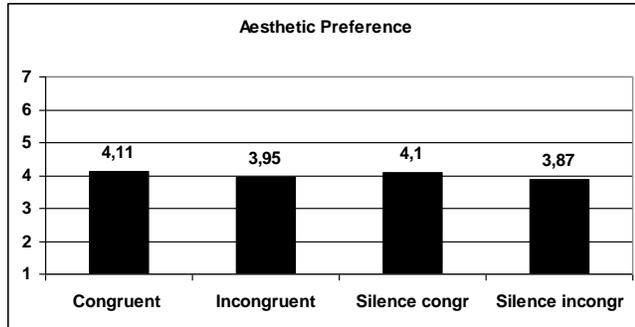
Figure 3: Aesthetic preference of the paintings in the congruent, incongruent and neutral conditions

Discussion

The finding that the aesthetic preference of the paintings is not affected by music suggests that participants are successful in dividing the aesthetic experience of two art modalities. This might be influenced by the instruction. Instead of evaluating only paintings in multimodal stimuli, further experiments should focus more on gestalt and ratings of the whole percept. Apart from the effect of instructions, the results might also be the partial indicator that the previously shown evidence about the genre's impact on the preference is an artifact, since neither objective features, nor aesthetic dimensions were controlled. If the genre matters and abstract paintings should be really perceived as more pleasant, and consequently, more aesthetically appealing, when exposed together with jazz, the main effect of music should have emerged to be significant in this study, taking into account that only abstract paintings and jazz were used as stimuli. Yet, congruence between two art modalities seems to be a significant aspect when it comes to the cognitive part of aesthetic evaluations. This makes us wonder if dimensions, on which (in)congruent situations were based, were chosen appropriately. Probably, *evaluation*, which was controlled and balanced through different groups of stimuli, is of a greater importance for cross-matching between music and visual arts in comparison to regularity and complexity. Putting such an important dimension of personal aesthetic experience under control and around moderate scores might have prevented participants from experiencing required arousal – necessary for effects of the music-paintings congruence to be demonstrated.

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Visual Attention and Detection of Auditory Stimuli

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Abstract

This study examines bimodal perception through modified inattentional blindness paradigm. It is a phenomenon of failure to notice a clearly distinguished stimulus when attention is focused on other stimuli. The main goal of this research is to test a cross-modal effect of this phenomenon. Two experiments were conducted. The visual attention was focused on estimating the length of the lines. In one trial, an auditory stimulus appeared unexpectedly and simultaneously with the visual task. The type of auditory stimulus was varied. The results show that focusing attention on the visual task does not limit the auditory perception. Failures in detection appear when additional sound, like a white noise, is included. The effect of white noise depends on the type of sound stimulus.

Keywords: visual attention, auditory stimuli, bimodal perception

Introduction

Visual perception is a process that enables us to get information about the environment that surrounds us. This process is largely determined by the attention. Visual attention is the first step in the processing of information because it provides their selection in space and time (Chun & Wolfe, 2001; Wolfe, 2000). But, when people are focused on the visual task, a certain amount of other information in the visual field remains unregistered. This phenomenon is known as *inattentional blindness* (Mack & Rock, 1998; 2000). It is not a result of damage of visual apparatus, neither is it a permanent state. During full involvement in a particular task, there is a temporary blindness to other content. Most of the research of this phenomenon has been focused on studying within one sensory modality – visual (Most et al., 2001; Simons & Chabris, 1999). But, within other sensory modalities, there is a certain type of „insensitivity". It was found that subjects cannot detect new tactile or olfactory stimuli if their attention is engaged in the task from the same modality (Dattel et al., 2013). Similar results are also obtained in auditory modality (Koreimann & Gula, 2014). Though many human activities involve the interaction of visual and auditory inputs, it raises the question about the effect of crossmodal attention in perception. Whether the engagement of the attention of a certain degree, regardless of a sensory modality, is a sufficient factor that limits the ability to detect prominent information in our surroundings?

The aim of this study is to examine the role of visual attention in detecting of stimuli that belongs to other sensory modality (auditory). This study also seeks to determine whether the type of auditory stimulus affects the efficiency of detection.

Considering that in everyday life we are not exposed to only one isolated sound source, this research also examined the effect of the white noise on noticing certain tones. The obtained results should contribute to understanding the importance of attention in a multisensory environment.

Experiment 1

Sample

44 participants participated in the experiment. 10 of a total number of participants participated in control trials that were conducted in order to test whether auditory stimuli can be heard at all with focused attention. These subjects correctly detected tones and their results were not included in further analysis. The final sample consisted of 34 participants, students of the University of Banja Luka (mean age of 20.9 years, range of 19 to 22). All subjects had normal or corrected to normal vision and normal hearing. They were tested individually. Although it is necessary to take measurements from a large sample of participants in order to obtain a reliable estimate of dependent variable, numerous researches of inattentional blindness were conducted on smaller samples (Furley & Memmert, 2010; Koivisto & Revonsuo, 2008; O'Shea & Fieo, 2015; Pěrez-Moreno, Conchillo & Recarte, 2011). Also, Schreiber et al. (2006) suggested that each parameter analyzed in the experiment should have at least 10 participants. Since there are only two categories of the independent variable in this experiment, the sample size may be considered acceptable.

Design and Procedure

The experiment consisted of four trials. Each trial began with the presentation of fixation point in the center of the computer screen for 500ms. After that, the cross was presented at the same location for 250ms. Subject's attention was focused on the visual task of estimating the length of the cross's lines. The same task was repeated through four trials. In the last trial, an unexpected auditory stimulus was presented simultaneously with the visual task. The type of auditory stimulus was varied. Two qualitatively different tones (Tone 1 – *Fizzaerosol*, Tone 2 – *Wooden ball bounce on ceramic tile*) were selected from the Laurie Heller's environmental sound events database[2]. Tones were 16-bit, 44.1 kHz. The

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[2] A written permission was obtained for use

number of correct detections was measured when attention was engaged in a visual task.

Results and Discussion

Eighteen out of nineteen subjects (94%) detected Tone 1 and fourteen out of fifteen subjects (93%) detected Tone 2. The results showed that subjects achieved great accuracy in reporting of hearing the unexpected stimulus. Test of proportion is not statistically significant ($z = .1727$, $p = .86$), so it can be concluded that accuracy did not depend on the type of auditory stimulus. Such findings suggest that the stimulus detection in one sensory modality is relatively independent of attention engagement in another sensory modality.

Experiment 2

Sample

44 new participants participated in this experiment. Ten subjects were included in control trials in order to test the stimulus detectability with focused attention and accompanying by white noise. All ten subjects responded correctly and these results were not included in further analysis. The final sample consisted of 34 first-year and second-year students of the University of Banja Luka.

Design and Procedure

The stimuli and procedure were the same as in Experiment 1. The only difference was a white noise that was played through all four trials.

Results and Discussion

Ten of eighteen subjects (55%) detected Tone 1 and thirteen of sixteen (81%) detected Tone 2. The number of detections is higher for Tone 2, but the test of proportions is at the border of statistical significance (z = -1.599, p = .055).

Since the experimental procedure was the same as in Experiment 1, the results were compared to determine the differences between "silent" and "noisy" conditions. Figure 1 displays the detection results for two experiments.
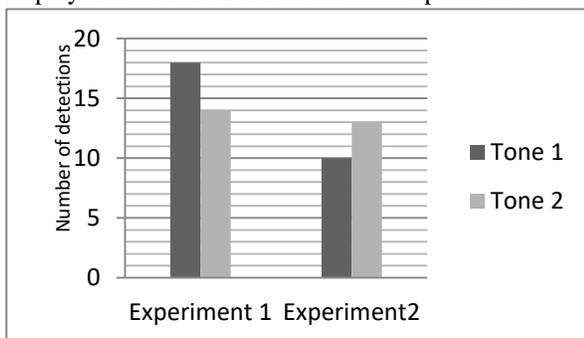

Figure 1. Results of tone detections in two experiments (with different conditions – silent and noisy)

The presence of white noise significantly reduced the ability to detect auditory stimulus when attention was focused on the visual task ($\chi^2(1,68) = 7.703$, $p < .01$). There is also a difference in detecting one type of auditory stimulus in the presence and absence of white noise ($\chi^2(1, 37) = 7.709$, $p < .01$). This finding suggests that failures in the detection of stimulus in one sensory system do not depend on the available resources of the different sensory system, but this effect is not the same for various unattended stimuli.

General discussion and conclusion

Attention has a major role in perception because it provides information selection and speeds up their processing. But, attention has limited capacity, so it often happens that a strong focus on one sensory input occupies all the available resources of attention and other sensory inputs remain unregistered. This research examines whether the same phenomenon occurs when inputs belong to different sensory modalities. Considering that many human activities involve concurrent reception of information from ear and eye, this study of bimodal perception has focused on the role of visual attention in the detection of auditory stimuli.

The findings of this study show that focusing attention on the visual task does not limit the auditory perception. Participants have registered exposed tone with high accuracy. Sinet et al. (2006) found the same results suggesting that there are separate attention resources in each of these sensory systems. The detection of auditory stimuli without an active focus on them is highly adaptive because warning and alarm signals are often unexpected and unannounced. Dalton and Lavie (2004) stated that auditory stimuli receive high processing priority and can be depicted as an early warning system. When additional sound, like a white noise, is included in the experiment the detection of isolated tones in the absence of focused attention significantly decreases. These results clearly show that detection of auditory stimulus does not depend on the engagement of visual attention, but depends on the additional load of the auditory sensory system. The presence of irrelevant sound consumes most of the auditory attention capacity and leaves less available resources for noticing other information from the same modality.

This study also shows that the effect of white noise depends on the type of sound stimulus. One type of stimulus is easier to detect in the presence and absence of white noise. It is possible that one tone is blending with background noise due to their similarity.

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Knights of the Round Table – The Importance of Symmetry and Number of Constitutive Elements for the Identification of Circular and Angular Forms

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Abstract

This paper deals with the stability of form identification in dot sets and its dependence on the set shape, symmetry in dot layout and number of constitutive elements. Chosen stimuli included two angular (square and equilateral triangle) and two circulars (circle and ellipse) forms of dot sets with collinear and approximately equidistant dot layout. We can say that with the increasing the number of dots in the set, identification accuracy of the given form, during the amodal completion, also increases. More accurately, the identification of circular forms is linearly increasing with the rise of a number of constitutive elements, regardless of their composition. With angular forms of square and triangle, identification accuracy is also increased with increasing the number of elements, but this time growth is not linear. The symmetry of the elements gave ambiguous results which probably indicates, that this factor is less relevant for form identification.

Keywords: amodal completion; symmetry/asymmetry; dot sets; collinearity

An amodal completion phenomenon represents the perception of coherent gestalts based on incomplete or barely specified stimulation of which the participant is aware, and it takes place in perceptual instances at higher levels (Singh, 2004).

The simplest mode of amodal completion is considered to form perception in dot sets. Although each layout of dots within the set may be connected in more than one way, some sets are characterized by high stability of percept. The question of the perceptive organization has been explained by gestalt psychologists with laws of grouping which include proximity, similarity, continuity, closure and common fate (Wertheimer, 1955 according to Kimchi, 2000). Researches show that asymmetrical and mostly equidistant dot layouts within a set increase multi-stability of form perception. Sets with collinear and equidistant dot layout or symmetrical and asymmetrical layout are characterized by invariable form perception (Marković, 2004). If the level of symmetry is being controlled, sets with continuously threaded elements are characterized with a smaller level of perceived form multi-stability, and with a larger level of percept good form (Prägnanz) in contrast to sets with a larger level of element equidistance (Marković & Subotić, 1997 according to Marković, 2004). On one hand, increased equidistance of elements in dot set increases the perceptual instability of percept, while on the

other, it increases symmetry level (Kubovy & Wagemans, 1995). It has been also shown that highly symmetrical sets are not observed as multi-stable contours or figures in the background but rather as a unique two-dimensional texture (Marković, 2004).

Although it is shown that layout symmetry and number of elements within the set are important factors of perceived form stability, their mutual interaction wasn't examined. In other words, the question is whether these two factors function independently of each other. Also, the interaction of layout symmetry and the number of constitutive elements with the form of the whole set was not investigated. The aim of this research was to investigate the interaction of various factors which affect perceived form stability in dot sets: symmetry of the set, number of constitutive elements and the form of the set itself (circular or the square).

Method

Participants: Research included 36 psychology students, 8 male and 28 female, from the age of 18 to 24.

Stimuli: Materials used as stimuli consisted out of 24 cards (21cm x 14.7cm), with the achromatic set display. Stimuli layouts were symmetrical or asymmetrical, with 8, 12 and 16 dots located on the contours of a square, equilateral triangle, circle or ellipse.

Dot sets have been created by positioning 32 dots on the figure contour (control stimulus). The first dots to be removed were those on the vertices, and after that other dots have been removed randomly until reaching the set with an aimed number of dots (8, 12 or 16). Final dot configurations were symmetrical or asymmetrical, collinear and with approximately equidistantly positioned dots.

Procedure: Each stimulus was presented to participants and their task was to connect dots in a form which suits their perception. The order in which stimuli have been presented was randomized.

Results

For each stimulus, participants received code 1 if the answer was correct, and code 0 if the answer was incorrect. The rule for accurate connection of dots in contour was 30 or more connected dots (91%) as in the control stimulus, and less than that was considered an incorrect answer. This

criterion was used since we were interested in form recognition, and therefore deviations larger than 10% from the given form can be considered as non-recognition. In research, we varied: a form of the layout (square, triangle, circle and ellipse), layout symmetry (symmetry, asymmetry) and a number of dots (8, 12 and 16).

Three-factorial analysis of the variance for repeated measures was performed (table 1) and results show the significant main effect of form and number of dots, as well as the interaction of form and number of dots, layout symmetry and a number of dots, layout symmetry and a number of dots and form.

Table 1: Significance of the effects of form, layout symmetry, number of dots and their interactions

	df	F	p	Eta²
form	3; 105	21.905	**.000**	.385
layout symmetry	1; 35	.854	.362	.024
number of dots	2; 70	254.097	**.000**	.879
form * layout symmetry	3; 105	.362	.780	.010
form * number of dots	6; 210	57.115	**.000**	.620
layout symmetry * number of dots	2; 70	5.191	**.008**	.129
form * layout symmetry * number of dots	6; 210	3.486	**.003**	.091

A number of elements: Scheffe's post-hoc tests show that there are statistically significant differences in accuracy of form identification between 16 and 8 dots in square form, in both symmetrical and asymmetrical dot layouts (appendix 1). Concerning triangle shape, there is a statistically significant difference only between the

asymmetrical arrangement of 16 dots and the other two, 12 and 8 (appendix 1). Form identification of both angular forms is higher if stimuli consist out of a larger number of dots, but the trend is not linear. In other words, every increase in a number of dots does not lead to an increase of identification accuracy (Figure 1 and Figure 2).
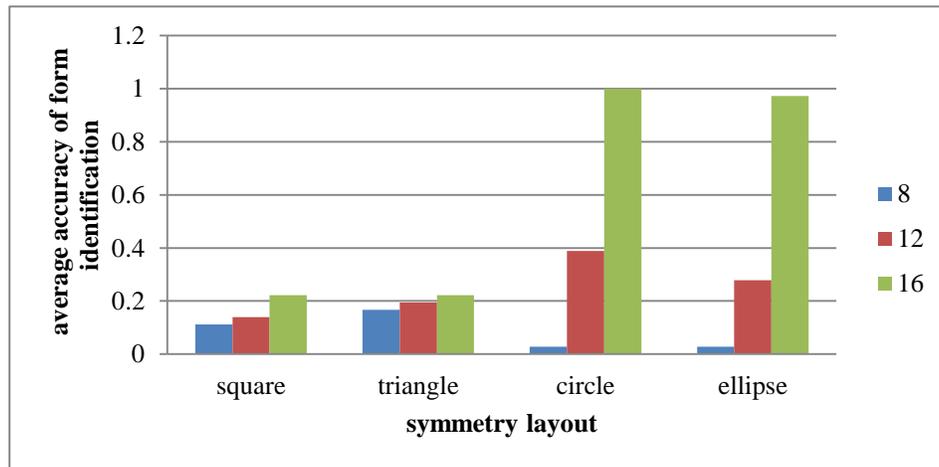

Figure 1: Accuracy of symmetrical form identification in relation to the number of dots

There are no statistically significant differences in the accuracy of form identification in rounded forms, except between asymmetrical dot layouts with 12 and 8 dots (appendix 1). Elliptical forms are accurately identified only when a number of constitutive elements is large (appendix 1). In round forms, identification accuracy increases with increasing the number of dots (Figure 1 and Figure 2).

Layout symmetry: Concerning angular forms, there are no statistically significant differences in the accuracy of square form identification if the elements are symmetrically or asymmetrically positioned. With triangle form participants are better in identifying symmetrical form layout, but only if the stimuli consisted out of 12 dots.

Concerning round forms, there are no statistically significant differences in the accuracy of elliptical form identification if the elements are symmetrically or asymmetrically positioned. There are differences in the accuracy of the identification of the circular form of 12 (symmetrical layout is identified more accurately) and 8 (asymmetrical layout is identified more accurately) dots (appendix 2).

Therefore, concerning square and ellipse, it was equally difficult for the participants to identify the form, regardless of the dot layout was symmetrical or not. On the other hand, form identification of a triangle and a square does

show some differences in accuracy, but not always in the same direction.
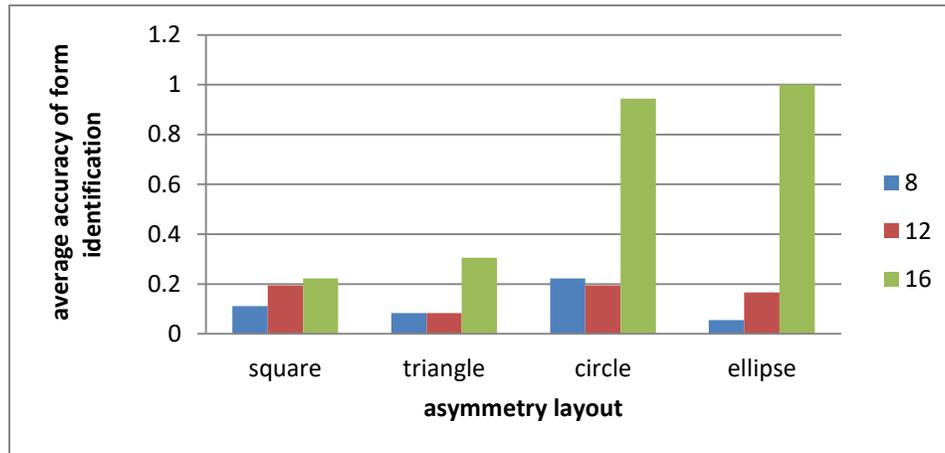
Figure 2: Accuracy of asymmetrical form identification in relation to the number of dots

Discussion

This paper attempted to show the importance of layout symmetry and number of constitutive elements role, in the amodal completion of dot sets. Considering round shapes, participants show a clear tendency to better recognize sets with a larger number of constitutive elements, regardless if they are symmetrically or asymmetrically positioned. When it comes to angular forms, participants are better in the identification of the form, only when the number of constitutive elements is maximally increased. For the squared shape, an increase of a number of elements improves identification for both, symmetrical and asymmetrical layouts, while for the triangular shape it only stands for asymmetrically positioned elements.

If we consider symmetry layout, results have shown that only for circle and triangle, accuracy increases when 12 elements are symmetrically positioned, rather than asymmetrically. As opposed to that, circular shape with the smallest number of constitutive elements (8) is more successfully identified, if the elements are asymmetrically positioned.

Therefore, regardless of symmetry layout, for round shapes, the level of identification linearly increases as the number of constitutive elements increases. For angular forms, identification accuracy increases only if the number of elements is doubled. These results suggest that in round forms, which do not have dots carrying more information for identification than the rest of the contour, linear increase of identification accuracy is noticed with

enlargement of the number of elements. In these forms, all the elements are equally informative and only variable which helps in the identification of the form is their number. On the other hand, for angular forms, identification accuracy does not increase linearly as a number of dots increases which is probably the consequence of unequal information load of different parts of a contour. In fact, in angular forms, fracture points carry more information than other parts of a contour, and therefore they are more important for shape identification. Unlike the number of elements, layout symmetry did not show unambiguous results and its importance for form identification is probably smaller.

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Appendixes

Appendix 1.Scheffe post-hoc tests, for form identification accuracy dependence on the number of dots (only significant differences are shown)

form	layout symmetry	(I) number of dots	(J) number of dots	mean difference (I-J)	p.
square	symmetry	16	8	.111*	.044
	asymmetry	16	8	.111*	.044
triangle	asymmetry	16	12	.222*	.003
			8	.222*	.003
circle	symmetry	16	12	.611*	.000
			8	.972*	.000
		12	8	.361*	.000
	asymmetry	16	12	.750*	.000
			8	.722*	.000
ellipse	symmetry	16	12	.694*	.000
			8	.944*	.000
		12	8	.250*	.005
	asymmetry	16	12	.833*	.000
			8	.944*	.000
		12	8	.111*	.044

Appendix 2: Scheffe post-hoc tests, for form identification accuracy dependence on symmetry layout (only significant differences are shown)

form	number of dots	(I) layout symmetry	(J) layout symmetry	mean difference (I-J)	p
triangle	12	symmetry	asymmetry	.111*	.044
circle	12	symmetry	asymmetry	.194*	.033
	8	symmetry	asymmetry	-.194*	.006

Appendix 3: Examples of stimuli used in the study
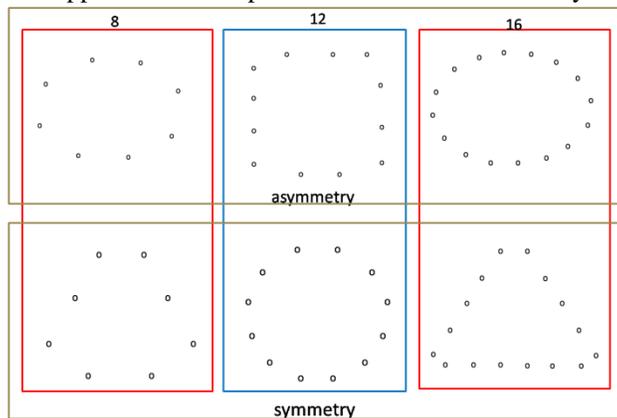
A person, a dog, and a vase: The effect of avatar type in a perspective-taking task

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Abstract

Recent research has shown people process what another person sees even when not explicitly taking the other person perspective. Results show people are slower in their responses when a different number of stimuli can be seen from one's own and the avatar's (other) perspective. In these incongruent trials, the avatar's perspective interferes with the response about one's own perspective and vice versa. However, a question remains whether this is purely a consequence of perceptual cueing or if social information contributes to the effect. The goal of our study was to investigate differences in automatic processing depending on avatar type. The experiment was a 2 (perspective) × 2 (congruence) × 2 (avatar type) repeated measures design. Participants were significantly slower for incongruent trials and from the other's perspective. Additionally, perspective by avatar type interaction was significant. Participants were slower from the other's perspective only for human avatars, but not when the avatar was a dog. These results may imply additional time is required to take the perspective of a human being while the perspective of a dog represents a perceptive cue rather than requiring that additional step. We may conclude both perceptual and social information may contribute to perspective taking.

Keywords: mentalizing; perspective taking; dot perspective task; visual attention

Introduction

The question of whether or not we can theorise about what other people see, think and feel is trivial. This ability has been labelled as mentalizing: the ability to represent other people's mental states and it is based on the concept of theory of mind (Premack & Woodrugg, 1978). While this ability seems to be self-evident, the question of whether these processes arise automatically or only through conscious effort is far from trivial. Recent research indicated that processing other people's perspectives occurs implicitly even if participants are instructed to ignore the other person's perspective (Samson, Apperly, Braithwaite, Andrews, & Bodley Scott, 2010).

The dominant methodological procedure in these types of experiments is the dot perspective task. In this task, participants are asked to take one of two perspectives: their own (self) or the perspective of an observer presented in an image (other). In the congruent situations, the same number of targets can be viewed from both perspectives while in incongruent situations a different number of targets can be viewed from two perspectives. The single trial procedure is as follows: first, the perspective from which the participants are required to observe is cued. Second, the number of stimuli

is cued. Finally, participants have to decide whether the cued number of stimuli can be seen from the cued perspective. The usual effect is a slower response in incongruent trials. This effect proves stronger when participants observe from the other person's perspective when compared to their own, although the interference effect is also present when observing from one's own perspective (Santiesteban, Catmur, Coughlan Hopkins, Bird, & Heyes, 2014).

While the existence of the fundamental interference effect has been replicated, there is some debate about whether or not this effect is a consequence of automatic mentalizing or simply a perceptual effect due to attention orientation by perceptual cues (such as the direction of gaze of the avatar in the image). According to Santiesteban et al. (2014), the effect is perceptive in nature. In their experiment avatars were people and arrows. Results showed no difference in the interference effect depending on avatar type. Both a human avatar and an arrow produced the same level of interference. Using a different paradigm Cole and his colleagues (Cole, Smith, & Atkinson, 2015; Cole, Atkinson, Le, & Smith, 2016) reached the same conclusion. They tested the strength of social information by placing barriers between the avatars and the stimuli. There was no effect of the barriers on the interference so they concluded participants did not automatically process the avatar's mental state. On the other hand. Kragh Nielsen, Slade, Levy, and Holmes (2015) found that the interference effect was lower for arrows when compared to human avatars. They also found a positive correlation between components of the Interpersonal Reactivity Index and interference size when the avatar was a person, but not when it was an arrow. In a modified version of the task, Valerjev & Dujmović (2017) found that there was no effect of avatar skin colour on the size of the interference effects.
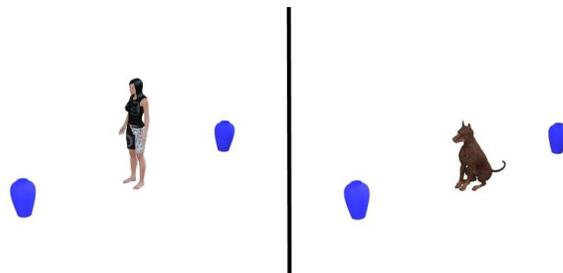

Figure 1: Examples of incongruent stimuli for a person (left panel) and a dog (right panel)
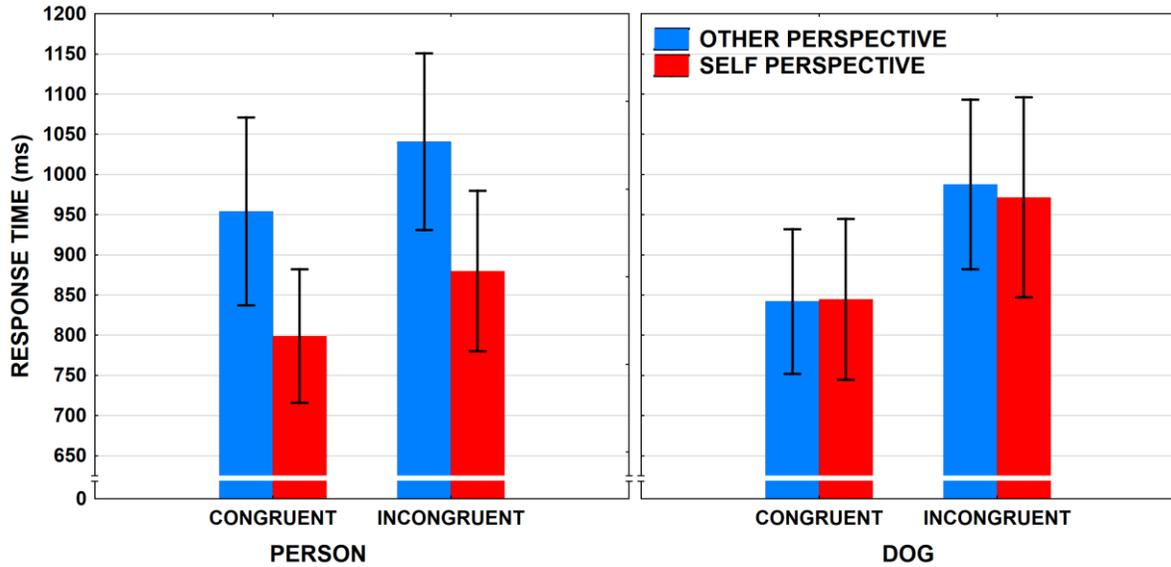
Figure 2: Response times as a function of avatar type, congruence and perspective

The goal of this study was to investigate differences in the level of interference depending on the species of the avatar in the task. If automatic mentalizing does indeed occur it should lead to different sizes of the interference levels depending on avatar type. We expected the interference to be greater when the avatar was a human being compared to when it was a dog.

Method

A total of 33 undergraduate psychology students participated in the experiment which was designed and conducted using the E-Prime software package.

The experiment was a 2 (person/dog) × 2 (self/other perspective) × 2 (congruent/incongruent) repeated measures design. Participants could see a person or a dog as the avatar, they could respond from their own or the avatar's perspective, and the number of stimuli (vases) which could be seen from the two perspectives could be congruent or incongruent. An example of two stimuli depending on avatar type can be seen in Figure 1. The stimuli were designed in the Daz3D software package.

The single trial procedure was a modified version of the dot perspective task. The participants were cued from which perspective they were observing the scene by text ("SELF" or "OTHER") which was shown for 750 ms prior to the target. The target scenes were then shown and participants had to respond as fast and as accurately as possible by responding to the number of stimuli which could be seen from the cued perspective. In half of the trials the correct response required pressing the numerical key "1" and for the other half the key "2". The total number of trials was 64, eight per experimental condition and the order of presentation was randomised for each participant.

Results

In order to prepare the data for analysis, only correct responses and responses which had response times within the +/-3 standard deviation range were included. Correct responses made up 93.80% of all responses, and 2.68% of the correct responses were excluded due to extreme response times. For each participant mean response times were calculated in each experimental condition and this made up the final data set for analysis.

To determine whether avatar type had an effect on the pattern of response time results a 2 (avatar type) × 2 (perspective) × 2 (congruence) analysis of variance for repeated measures was conducted. The results of this analysis can be seen in Table 1.

Table 1: ANOVA results for response times

Effect	$F(1, 32)$	η_p^2
Congruence	15.25**	.32
Perspective	11.40**	.26
Avatar	0.09	.00
Congruence × Perspective	0.06	.01
Congruence × Avatar	1.42	.04
Perspective × Avatar	13.04**	.29
Three-way interaction	0.01	.00

**$p < .01$

As expected, participants responded faster in the congruent when compared to incongruent trials and from their own perspective. Tukey HSD post-hoc comparisons showed that participants were significantly slower when responding from the perspective of the avatar compared to their own when the avatar was a person, but this difference was not significant when the avatar was a dog. These results can be seen in Figure 2.

Discussion

The results replicated the consistent findings which show the main effects of congruence and perspective. This, however, was qualified by a significant perspective by avatar type interaction which is the most significant result of the study. Participants were slower from the avatar's perspective compared to their own only when the avatar was a person. The difference between the two perspectives was not significant when the avatar was a dog. We speculate about two possible explanations for this interaction effect.

First, when participants respond from the person's perspective, the avatar draws more attention relative to the target stimuli. This additional orienting of attention prolongs response times for human avatars but is not present when the avatar is a dog. This more complex processing may be attributed to mentalizing due to the higher similarity between the participants and a human avatar when compared to a dog.

Second, a dog may serve as a better cue for orienting attention to the target stimuli (due to shape and slant towards the target). This would potentially mean less attention was focused on the avatar when the participants judged from the "other" perspective. As a result, there was no difference between the two perspectives when the avatar was a dog.

Both explanations seem plausible, and they do not necessarily exclude each other. The effect may be due to some social/perceptual interaction.

The main goal of the study was to determine whether the avatar type has an effect on the size of interference effects. The results do not indicate that the difference between congruent and incongruent trials depends on avatar type.

We conclude the debate on automatic mentalizing is still open with the possibly more complex interaction between purely perceptual and social processes impacting the results. Further study and variations of perceptual and social information are needed in order to clarify some of the results presented here.

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Intuitive and Analytical Cognitive Styles as Determinants of Belief in Conspiracy Theories

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Abstract

Belief in conspiracy theories (CTs) can be related to more general cognitive constructs, such as cognitive style. While some studies found a negative relation with analytical and positive with intuitive cognitive style, others failed to replicate both but found an only positive relation with intuitive. We sought to gather more evidence on this with non-English speaking respondents, measuring both conspiracy mentality and specific CTs, locally and internationally relevant. We used CMQ to measure general conspiratorial mentality, developed a new instrument comprised of six vignettes to measure belief in specific CTs (e.g. climate change denial, "chemtrails", dissolution of former Yugoslavia). Exploratory factor analysis of the specific CTs scale (N=121) yielded a one-factor solution (around 50% of variance explained) after excluding one item. The results corroborated both negative associations between analytical style and belief in CTs and a positive one between intuitive style and belief in CTs. These two cognitive styles explained about 15% of the variance in belief in specific CTs. As for the conspiracy mentality, the relationship with intuitive style was significant but smaller than with specific CTs, whilst the relationship with analytical style was not significant. We discuss the options of experimentally inducing different types of thinking and their consequences in terms of general and specific CT beliefs.

Keywords: conspiracy theories; analytical thinking; intuitive thinking; conspiracy mentality; cognitive styles

Introduction

Research suggests that the belief in conspiracy theories (CTs) should not be viewed as rare or pathological but rather widespread in general public: for example, half of the US population endorses at least one CT (Oliver & Wood, 2014). Although that fact alone merits further research, it has been proven that these beliefs can lead to important behavioral consequences such as vaccination refusal or non-voting (Jolley & Douglas, 2014a; Jolley & Douglas, 2014b).

One of the most robust findings in this line of research is that one CT corroborates the other, i.e. that belief in one predicts belief in another. This system of beliefs is labelled "monological belief system" (Goertzel, 1994; Swami et al., 2011). The endorsement of the monological belief system has proven to be related to more general styles of thinking; research found a positive relation between endorsement of CTs and intuitive thinking style (Swami, Voracek, Stieger, Tran, & Furnham, 2014; Stojanov, 2015), whilst a negative relation with analytical style was found in some (Swami et al., 2014) but not in other studies (Stojanov, 2015). We hypothesized that these inconsistencies might be due to different operationalizations of CTs used in different research. Namely, the relation with analytical style is to be expected when it comes to specific CT endorsement, but not when it comes to conspiratorial mentality, because the latter is more plausible and therefore not suitable to differentiate more and less analytical thinkers. In addition, we thought that the usual way CT questionnaires are constructed – respondents assessing one-sentence CTs they might or might not be familiar with – does not correspond to the nature of phenomenon well. This is because CTs are usually more elaborate, they form a narrative or a system of beliefs, in which some can be more plausible than the others.

Therefore, we set out to explore several things: first, we wanted to replicate the "monological belief finding" on a non-English speaking sample, and with a combination of internationally and regionally specific CTs. Second, we wanted to test if the relations between CT endorsement and analytical/intuitive thinking style might be different for specific and general CT beliefs so we introduced both measures in a single design. Third, we wanted to develop a new instrument to assess belief in CT which would consist of vignettes as opposed to dominant one-item approach and to include decreasingly plausible conspiratorial ideas referring to the same topic. This was meant to (a) increase ecological validity of the measure and (b) allow us to test the possibility of different acceptance rate of the differently plausible conspiratorial ideas, i.e. to test the "plausibility" effect.

Method

To assess cognitive style, we applied REI–40 questionnaire with two subscales aimed to measure rational/analytical and experiential/intuitive thinking style (Pacini & Epstein,

1999). Subscales showed high reliability (α = .85 for analytical, and α = .92 for intuitive scale) and orthogonality ($r(119)$ = -.01, $p > .05$) which is in accordance with the theoretical assumptions.

We assessed CT belief with two instruments: the first one measured general conspiratorial belief (Conspiracy Mentality Questionnaire, CMQ; Bruder, Haffke, Neave, Nouripanah, & Imhoff, 2013) and the scale showed satisfactory reliability (α = .78). The other instrument was constructed for the study; it comprised of six vignettes measuring belief in specific CTs (climate change denial, "chemtrails", and dissolution of former Yugoslavia, September 11 attacks in the U.S, Assassination of J.F Kennedy, and origin of HIV). Every vignette had the same structure: (1) official interpretation of the events and (2) conspiratorial point of view with three arguments, (3) three statements related to the topic which were to be evaluated on a scale ranged 1 (*not probable at all*) to 7 (*very probable*). Statements were produced so that they differ in plausibility so that the first is the most and the third the least plausible. Vignette sample ("chemtrails") is provided in Appendix.[3]

Results

In total, 121 participants completed the survey (71.1% female, M_{age} = 25.79, SD = 9.57). The new scale measuring belief in specific CTs showed high internal reliability (α=.935), while three-item vignettes showed moderate to high reliability (from α = .69 to α = .90). Exploratory factor analysis of the scale yielded a one-factor solution (49.75% of variance explained) after excluding one item from the analysis. Correlations between vignettes are given in Table 1. High positive correlation between belief in specific CTs and conspiracy mentality (CMQ) suggests good construct validity of the new scale ($r(119)$ =.661, p < .001)

Table 1: Correlations between three-item vignettes measuring belief in specific CT, means and standard deviations

	1	2	3	4	5	6
9/11	-	.356[*]	.538[*]	.544[*]	.534[*]	.645[*]
CLIM		-	.426[*]	.562[*]	.510[*]	.457[*]
YUG			-	.458[*]	.482[*]	.620[*]
CHEM				-	.764[*]	.619[*]
HIV					-	.593[*]
JFK						-
Mean	6.21	4.40	6.39	4.80	6.04	6.00
Sd	1.74	1.89	1.83	2.07	2.05	1.96

Note. *p < .001

Repeated measures ANOVA showed that plausibility effect (3 levels) was significant, $F(1.66, 199.73)$ = 70.585,

[3] Full instrument and database available at osf.io/ztwck

$p < .001$). A post hoc Sidak test showed that items of first and second level plausibility differed from the items of third level plausibility (least plausible) significantly at $p < 0.01$. This slope was in the expected direction for all CTs, accept for one – JFK assassination, in which participants most endorsed third statement (which we judged as the least plausible). This was probably due to the prevalence of this CT i.e. that it is part of common knowledge (hardly anyone, even in Serbian public, accepts the official narrative).

The results corroborated both negative associations between analytical style and belief in specific CTs ($r(119)$ =-.235, $p < .01$), and a positive one between intuitive style and belief in specific CTs ($r(119)$ = .304, $p < .01$). Regression analysis showed that these two cognitive styles explained about 15% of the variance in belief in CTs (R^2=.147, $F(2,118)$ = 10.133, $p < .001$). As for the conspiracy mentality, the relationship with intuitive style was significant, but the effect was smaller than with specific CTs ($r(119)$ =.19, $p < .05$), while the relationship with analytical style was not significant ($r(119)$ = -.15, $p > .05$).

Discussion

Factor analysis and correlations between vignettes, as well as between vignettes and conspiracy mentality supported the assumption of monological belief system, suggesting that different CTs support one another and that they are tied together by an overarching more general narrative (Goertzel, 1994).

However, even though the positive association between intuitive thinking style and belief in CTs was replicated (as in Swami et al., 2014; Stojanov, 2015), the analytical style was only associated with belief in specific CTs, but not with general conspiracy mentality. This signals that future researchers should be sensitive to the content and level of abstractness of conspiracy theories, especially having in mind that CMQ measure was criticized to be at least partially factual (e.g. Swami et al, 2017), and more plausible than specific CT beliefs.

Given that analytical and intuitive thinking are orthogonal dimensions, our results suggest that there are different processes through which different cognitive styles are related to belief in CTs and that both inducing analytical and reducing intuitive thinking could be experimentally tested for reducing belief in specific CTs; conspiracy mentality, as a general belief system, though, could be more resistant to the manipulations of thinking styles. Additionally, we introduced and measured belief plausibility, which in the future might be tested as a moderator of the relationship between analytical style and belief in CTs, assuming that this relationship is stronger in implausible CTs and weaker in plausible CTs.

Acknowledgments

Appendix

Example of vignettes used
(Chemtrails conspiracy theory):

In some cases, after aeroplane passes, it leaves trails that are visible in the sky. The explanation for this phenomenon is that those trails are normal condensation trails made of water which aircraft routinely leave behind under certain air pressure. However, some believe that these trails are not the only ones that aeroplanes leave behind, but they are also leaving poisonous trails (called chemtrails) whose chemical structure is unknown. In order to support this point of view, they advance several arguments – that poisonous trails (chemtrails) last longer in the atmosphere than normal trails do, many witnesses claiming that chemtrails are forming clouds, photographs showing barrels instead of passenger seats, etc.

In your opinion, how plausible are the following statements:

1)   Some information about the influence of air traffic on climate and/or people's health remain unreported.

2)   Some scientists that are trying to prove the negative effects of air traffic are constantly obstructed.

3)   Powerful organizations are deliberately spraying chemical agents so they can test their effect on people's health.

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Prediction of social well-being on the basis of value orientations of students of different professional direction

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Abstract

The aim of the research was to determine whether there is a possibility of prediction of well-being based on value orientations of students of different professional orientations. In addition, we wanted to examine the contribution of socio-demographic factors (material status and age of respondents) to social well-being. The sample included 400 students, 200 students from the Faculty of Philosophy in Kosovska Mitrovica and 200 students from the Technical Faculty in Kosovska Mitrovica. The research used the following instruments: Keyes Scale of Social Well-being, Schwarz Scale of Universal Values and Socio-Demographic Questionnaire. The results show that there is a possibility of prediction of social well-being of students of different professional orientations based on value orientations. Through the value of Security, we can explain 38.6% of the variance of social well-being for students of humanities, while for the students of technical faculties the predictors of social well-being represent the values of Self-direction, Universalism, Hedonism and Tradition that explain 55.9% variance. The correlation between the material condition and the age of the respondents with social well-being was not established.

Keywords: Value; well-being; SDT

Introduction

The purpose of this work was to analyze the relationships between personal values and well-being. This study addresses a research between two hypotheses: a healthy values perspective and the value-environment congruence perspective, the first of which will be further developed in this work.

The relation between values and well-being can be observed from the perspective of healthy values (Sagiv, Roccas, Hazan, 2004). Furthermore, by taking into account the theory of self-determination (Deci & Ryan, 2000) where the main assumption is that personal values and intrinsic motivation reflect on self-actualization and psychological growth, and therefore, positively affect accomplishment. On the contrary, extrinsic values focus on obtaining approval, admiration and praise from others, and a positive impact on well-being is weaker than in personal values. Various studies confirm this hypothesis (Kassser & Ahuvia, 2002; Vansteenkiste et al., 2006). Authors (Jensen and Bergin, 1988) appointed the Self-direction, Benevolence and Universalism as "healthy" values. Additionally, values such as Conformism, Tradition, Security and Power belong to "unhealthy values" (Sagiv & Schwartz, 2000). The study (Sortheix, 2014) examined long-term predictors of well-being at work and proposed a conceptualization of career

values based on self-determination theory's ideas of autonomous versus controlled sources of motivation. This study shows that the relationship between individuals' values and well-being is influenced by social groups to which they belong. Researchers have provided vast evidence showing that giving priority to such intrinsic pursuits over extrinsic ones contributes to people's well-being (Kasser, 2002). The effect is found even in contexts which should support these values, such as business universities (Vansteenkiste, Duriez, Simons, & Soenens, 2006). Sagiv and Schwartz (2000) reasoned that students, who hold values congruent with their major, would gain approval for their values as well as for value-congruent behaviours. Sagiv and Schwartz (2000) showed that the context offered by students' majors moderated the relationship between values and well-being in student samples. The value of power attends to characteristics of careers in business while Benevolence responds to careers in psychology (Gandal, Roccas, Sagiv, & Wrzesniewski, 2005). Thus, Sagiv and Schwartz (2000) suggested that when the environment supported and encouraged certain types of values (e.g., power in business careers), then adhering to these values brought about positive outcomes in terms of personal happiness. Specifically, they found that Power values were related to higher well-being only among business students, and Benevolence values were related to higher well-being only among psychology students.

The aim of the research was to determine whether there is a possibility of predicting well-being based on the values of students of different professional orientations. In addition, we wanted to examine the contribution of socio-demographic factors (financial background and age of respondents) to the social well-being.

Method

The research was conducted on a convenient sample of students at the University of Priština. The sample included 400 students, 200 students from the Faculty of Philosophy in Kosovska Mitrovica and 200 students from the Faculty of Technical Sciences in Kosovska Mitrovica, age 18 to 34. Of the total of 400 subjects, there were 139 male and 261 female respondents, with average age of 21.48 ($SD = 2.48$).

Instruments

To measure the individual values of students, Schwarz's Scale of Universal Values was used (Schwartz, 1992). This scale consists of fifty-six items and it measures eleven domains of value. Cronbach's alpha for the domains of value varies from .61 for Tradition to .75 for Universalism

(Schwartz, 1992). Social well-being is estimated by the shortened Keyes' Scale of Social Well-being. The scale consists of five different dimensions: acceptance of others, social actualization, contribution to society, social coherence and social integration. Congruence for the scale of social well-being is 0.81 (Keyes, 2002). *The socio-demographic questionnaire* (financial background and age of respondents) was designed for the research purposes.

Results

The results showed that there is a possibility of prediction of social well-being of students of different professional orientations based on value orientation. Through the value of Security (β = .372), we can explain 38.6% of the variance of social well-being for students of social sciences, while for the students of technical sciences predictors of social well-being represent the values of Self-direction (β = .914), Universalism (β = .349), Hedonism (β = -.223) and Tradition (β = -.264) that explain 55.9% variance.

Table 1: The results of the regression analysis of the social well-being prediction for students of different science fields

Predictors	Social sciences: R2 = .386, p = .006		Technical sciences: R2 = .559, p = .000	
	β	p	β	p
Benevolence	.133	.532	-.090	.558
Universalism	-.155	.373	**.349**	**.007**
Self-direction	-.007	.973	**.914**	**.000**
Stimulation	-.048	.756	-.165	.157
Hedonism	.005	.973	**-.223**	**.057**
Achievement	.322	.064	-.264	.066
Power	-.051	.719	.008	.940
Security	**.372**	**.028**	-.153	.289
Tradition	-.251	.082	**-.264**	**.037**
Conformity	.126	.474	.224	.111
Spirituality	.150	.237	-.163	.206

The relationship between socio-demographic indicators and social well-being has been investigated using the Pearson linear correlation coefficient. The correlation between the financial background and the age of the respondents with social well-being was not established.

Discussion and conclusion

Summarizing the results of the research, we observe that value orientations explain 38.6% of the variance of social well-being within students of social sciences, while 55.9% of the well-being variance for the students of technical sciences. Socio-demographic characteristics, such as the financial background and age of the respondents, do not represent significant correlates of social well-being.

Based on the results of linear regression it can be concluded that the Security predicts social well-being for students of the Faculty of Philosophy. Universalism, Self-direction, Hedonism and Tradition are also predictors of social well-being but within the group of technical science students.

As it can be seen from Table 1, Hedonism and Tradition are negatively correlated with social well-being, while other values correlate positively with social well-being.

These results are partly in line with the assumption of healthy and unhealthy values based on the Theory of self-determination.

Furthermore, the important implication of this study is finding regarding the value correlates of social well-being. On our sample of technical science students, Self-direction positively correlates with social well-being, unlike students of Iranian University (Joshanlooa, Ghaedi, 2009) where there is no correlation between Self-direction and social well-being. In addition, Security and Universalism are significantly correlated with social well-being.

One other noticeable finding is that in the present sample, security was correlated positively with social well-being. This is inconsistent with Bilsky and Schwartz's (1994) hypothesis that security value (along with conformity and power values) represents deficiency needs and therefore priority given to this value is expected to correlate negatively with well-being. Yet, tradition value was negatively correlated with social well-being and should be considered socially unhealthy. It should be noted that Sagiv and Schwartz's (2000) results also showed that associations of well-being with power, security and conformity values were weak or inconsistent.

Some findings are inconsistent (while some others are consistent) with Kasser and Ryan (1996) hypothesis that pursuing extrinsic, materialistic values relates to poorer well-being, and pursuing intrinsic values leads to higher well-being. As Sagiv and Schwartz (2000) suggest self-direction, benevolence and universalism values are intrinsic and the power value is extrinsic. Finding that self-direction and universalism values had a significant relation to social well-being in this sample is consistent with this hypothesis. While for Iranian students, Universalism was negatively related to psychological well-being and Self-direction showed a rather mixed pattern of associations with different aspects of well-being.

All in all, this research is not enough to clarify whether the results are more in favor of the Theory of self-determination or the congruence hypothesis. Some of the limitations of this study were that we did not include students of other faculties such as medicine, economics, law, than universities in other cities as well as other aspects of well-being.

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The correlates of loneliness among young people

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Abstract

Loneliness is a major problem in many countries, which is why the increasingly ubiquitous phenomenon of one's own social position security loss and feelings of separation from others protrude. During adolescence, if friends do not provide love and support, this leads to disappointment, dissatisfaction and loneliness. Self-efficacy involves assessing one's own abilities in dealing with different challenges, whereas in different aspects of life low self-esteem and dissatisfaction can lead to suppression and loneliness. This research intended to examine the connection of self-esteem, self-efficacy, life satisfaction with the loneliness of young people, as well as the predictive value of the mentioned variables for loneliness. The research included N=1172 subjects ages 16 to 19 (52.9 female) from the area of northeastern Bosnia. Young people have not shown a higher loneliness level, girls acquaint lesser loneliness than boys while it was not found in relation to the age and the environment of young people. There was a significant negative correlation of satisfaction with life, self-esteem and self-efficacy, and these predictors explain 35.8% of the variance of the criteria.

Keywords: loneliness, self-efficacy, self-esteem, life satisfaction, young people

Introduction

Loneliness is a painful and negative experience that is an outcome of a person's social relations disability and it is very subjective (Lacković-Grgin, 2008). The literature states that "loneliness" and "solitude" are two separate, but interconnected phenomena. According to the same author, solitude is perceived as pleasant, healthy and desirable, because it implies freedom, fulfilment and calm, unlike loneliness, which is perceived as coercion, emptiness and anxiety, and as such - unpleasant, undesirable and painful.

Variables that determine the quality and quantity of social relationships - the number of close friends, the quality of friendly relationships, and reciprocity in relationships, social support, social skills and strategies are among the most important correlates of loneliness (Medvedev, Keresteš, 2009). According to Weiss (1973), loneliness is not only a function of personal and situational factors, but is created as a product of a combined action of these factors (Lacković-Grgin, Nekić, & Penezić, 2009).

Loneliness is most identifiable in adolescence, which largely attributes to the impact of major developmental changes that mark it (Goossens, 2006). According to Berk (2008), for example, young people are prone to imagining perfect social relationships that can make them vulnerable to shortcomings in current relationships.

Self-esteem is a central aspect of psychological functioning during adolescence (Moksnes, Moljord, Espnes, & Byrne, 2010), and it is emphasized that the level of self - esteem affects the various domains of life (Connor, Poyrazli, Ferrer-Wreder, & Grahame, 2004). Self-efficacy is an important determinant of interpersonal and intrapersonal functioning, which is extremely important in adolescence. Numerous studies reveal the importance of life satisfaction in all life phases. According to Ozben (2013), individual differences in life satisfaction in adolescents can predict important life outcomes as well *as loneliness*. Therefore, in this paper, a special emphasis is on the understanding of the connection of loneliness with self-esteem, self-efficacy and life satisfaction as important determinants of the psychological functioning of young people.

Method

This paper focuses on examining the relationship of loneliness with self-esteem, self-efficacy and life satisfaction in young people, and examining differences in gender, age and the environment. The survey included 1172 adolescents from secondary schools (52.9% female) from the Tuzla Canton (B&H) area. The average age of the adolescents is $M = 17.02$ ($SD = .99$). Measurement instruments used: The scale of loneliness (Bezinovic, 1988) ($\alpha = .875$), Scale of self-esteem (Rosenberg, 1965) ($\alpha = .796$), Scale of self-efficiency (Ivanov & Penezic, 1998) ($\alpha = .882$), Scale of general satisfaction (Penezić, 1996) ($\alpha = .924$) and sociodemographic questionnaire.

Results

The mean of the scale of loneliness, whose results can range from 18 to 90, lies in $M = 38.68$ ($SD = 11.95$), which indicates that adolescents (on average) achieve slightly lower results on this scale. Since asymmetry data ($Sk = .304$) indicate a positive asymmetry, which, as an additional indicator, indicates that most results are in the lower-score zone.

The results of the study show that girls are less lonely compared to boys ($M_m = 36.26$, $SD = 11.68$, $M_f = 41.41$, $SD = 11.67$); $t(1170) = 7.53, p < .001$. There are not differences in age ($F(3, 1168) = .558, p = .643$).

Young people from the rural environment are somewhat lonelier, but these differences are not statistically significant ($F(2, 1169) = .417; p = .659$).

Loneliness is in high correlation with life satisfaction ($r = -.524; p < .001$) and self-esteem ($r = -.481; p < .001$), while with self-efficiency, in medium-intensity correlation ($r =$

-.385, $p < .001$) (according to Cohen, 1988). Regression analysis results showed that self-esteem, self-efficacy and life satisfaction, as predictors, have a significant negative contribution ($\beta_1 = -.335$, $\beta_2 = -.275$, $\beta_3 = -.135$, $p < .001$) explaining the variance of loneliness (35.8%). Multiple correlation coefficient of all predictors with the criterion is ($R = .60$; $F(3, 1168) = 218.90$, $p < .001$). Hierarchical regression analysis results showed that variables entered at Step 1 (differences in age, gender and differences of living in the urban/rural area) explain 4.7% the variance of loneliness. After entry of the Self-esteem, Self-efficacy and Life satisfaction scale at Step 2, the total variance explained by the model as a whole was 38.3%, ($F(6, 1165) = 120.67$, p < .001).

Conclusions and discussion

Based on the results of some researches (Goossens, 2006; Brage, Meredith, & Woodward, 1993, Klarin, 2006), a greater degree of loneliness in young people was not found in this paper. The results in this paper coincide to the research conducted by Medvedev, & Keresteš (2009) and Neto & Barros (2000) which also did not find a higher degree of loneliness among young people. The reasons for such results lie in the fact that friendships in the adolescent period are more stable, and the integration into the community reduces loneliness. The increasingly frequent use of the internet leads to young people creating numerous virtual friendships, which can reduce the sense of loneliness.

Our results on the higher loneliness of young men are consistent with other research. (Chipuer & Pretty 2000; Klarin, 2002, 2004; Uruk & Demir, 2003). It is possible that these results are due to more developed social skills in girls, given the link between social skills and loneliness. According to Klarin, Proroković, Šimić-Šašić (2010), girls show greater satisfaction with the friendship quality than boys and significantly lower level of social loneliness. According to Medvedev & Keresteš (2009), males have less developed strategies for dealing with loneliness.

Differences in loneliness considering age were not determined as significant in this study, which conforms to some research (eg. Klarin, 2004; Mahon et al., 2007; Neto & Barros, 2000). Such findings could be explained by the possible achievement of stabilization in some aspects of the self and their lower dynamics. Nevertheless, as some studies have shown that older adolescents are lonelier than younger ones (eg Brage & Merdith, 1993; Chipuer & Pretty, 2000), it is possible that the results of our research have been affected by a small difference in age among the participants. In connection with this, further research should examine possible differences in samples with wider age span.

When it comes to the difference in loneliness in relation to the living environment, there was no significant difference, which is consistent with previous research (eg. Marić, 2017). This suggests that regardless of the greater possibilities for establishing social contacts in urban environments, it appears that more important mobility of people and the quality of interactions from the availability of contacts and their

frequency (according to Jones et al., 1985; Jones, 1981; Jackson et al., 2000).

Self-esteem, self-efficacy and life satisfaction have proven to be significant correlates of loneliness, and they explain a significant part of the loneliness variance. These results are consistent with the results of Penezic (1999); Lacković-Grgin et al. (1998b); McWhirter (1997); Brage & Meredith (1994) that loneliness is negatively linked to self-esteem and life satisfaction (Penezić, 1999; Lacković-Grgin & Sorić, 1999), and with a measure of self-efficacy (Ivanov et al., 1998; Brennen-McNulty, Ross, & Burgess, 2003). An explanation of the relationship of the above variables suggests that these three predictors can influence the emergence of loneliness by acting on the social network of a person. Lower self-esteem, satisfaction and self-efficacy individuals can think that others have no high opinion of them; they feel deprived and rarely initiate social contacts, which can lead to a sense of loneliness. The explanation is consistent with the research by Levin & Stokes (1986).

Life satisfaction, self-esteem and self-efficacy are important psychological resources that can contribute to loneliness reduction among young people, as confirmed by this research.

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Gender equality: transformational impact of theatre based intervention (TBI)

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Abstract

Promoting gender equality leads to reduced poverty, improving public health, education, and overall well-being of the population. Serbian society is still far from becoming universally gender-equal (Babović, 2016). The aim of this study was to present and evaluate a theatre based intervention as a method to make young people more aware of issues regarding gender. Theatre based intervention (TBI) comprises of audience participation in a) reversing gender roles in different scenarios during the play and b) discussions about the scenarios. We examined four variables: 1) gender roles in the family, 2) gender power dynamics, 3) sexual behavior and 4) gender compliance on a sample of 116 subjects (participants in TBI) in three cities in Serbia. Using a pre/posttest method, the same questionnaire was given before and after the intervention. The theatre based intervention had a significant impact only for one indicator: the gender compliance variable. We speculate that this is because of the direction discussion had taken after TBI.

Keywords: Gender roles, theatre intervention, gender equality, gender compliance

Introduction

It is well confirmed that gender equality is the basis of every developed society since it promotes competition and enables the actualizing of each individual regardless of their gender. Gender equality is defined as "the condition or state that gives women and men equal enjoyment of human rights, socially valued goods, opportunities and resources, enabling them to develop same potentials to contribute to and profit in all spheres of society (economic, political, social, and cultural)" *(Priručnik za predavače o rodnoj ravnopravnosti).* In order to achieve equality it is important to ensure equal treatment and equal opportunity for all men and women (Lewis, 2006); to do this society, in general, has to become aware of traditional gender constructs and stereotyping (Lewis & Giullari, 2005). Some scholars in their research focus on

equality in terms of access and participation in education, others focus on the effects gender has on the economy or the health and well-being of women (Subrahmanian, 2005; *Economic Benefits of Gender Equality in the European Union*, 2017; Klonoff, Landrine, & Campbell, 2000). Inequality still exists in different spheres in most modern societies. For example, as documented in empirical studies, males are given greater opportunities for employment and promotion (Mihalčova, Pružinsky, Gontkovičova, 2015; see also Klasen and Lamanna, 2009). Or, women more often suffer from mental disorders and exhibit more psychological symptoms (Jasovic Gasic & Lecic Tosevski, 2014; Klonoff, Landrine, & Campbell, 2000).

Individual psychological mechanisms maintain traditional gender interaction. Gender stereotypes are highly prescriptive (Prentice & Carranza, 2002) affecting thoughts, feeling and behavior (Jost & Kay, 2005) and considering sex differences in influenceability women were much more influenced by an unequal status quo (Eagly, 1981).

In Serbia, empirical studies showed that gender equality is still not at a satisfactory level. Serbia is below the EU average on the gender equality index achieving a score total of 40.6, while in the EU the total score is 52.9. The biggest difference is seen in the domain of work and pay (Babovic, 2016). It is of great importance to raise awareness of the necessity for gender equality. Therefore, different types of community intervention exist in Serbia (Ivković, 2016; *Akcioni plan grada Pančeva za unapređenje položaja žena i rodne ravnopravnosti za period 2016 – 2018 godine*; Aleksov, 2015), attempting to develop gender equality more. None of the interventions has been empirically evaluated.

We evaluate one of the possible community interventions aiming to improve gender equality: theatre based intervention (TBI) on changing attitudes towards gender equality of young people in Serbia. TBI deliberately challenges gender norms,

making participants become more aware of gender constructs. This project is funded by the IPPF (International Planned Parenthood Federation).

Method

Sample

We examined the attitudes of 116 subjects that participated in TBI (M_{age} = 22.51, SD = 7.08, 61.1% female) in three cities in Serbia: Belgrade (n = 46), Novi Pazar (n = 40) and, Zajecar (n = 30). The average age of the participants in the sample was 22.51. They report spending an average of 13.20 years in education, being of higher socioeconomic status (3.30 on a five-point scale), and not very religious (2.69/5.00). A conventional sample was used, in each town a local NGO's was given the task to find participants, targeting young people.

Procedure

The intervention consisted of three parts. An introduction, where basic concepts (such as sex and gender) were explained. A theater intervention in which the participants entered the roles of actors and independently created a script on three predefined topics (such as: design, and act out a TV commercial on any product, prepare a toast for an 18th birthday party, participate in an episode of a famous TV show on the everyday problems of couples who live together). The third part of the intervention consisted of discussions about the played out scenes. The discussions were conducted by moderators after each topic separately.

Participants attitudes were assessed using paper and pencil procedure. A questionnaire was given before and after the intervention. Two same self-reported instruments were administered to the participants before and after the play and lasted around 15 minutes each. The time duration between the

first and second measurement procedure was approximately four hours (overall TBI session lasted about 5 hours in each town). After filling in the questionnaire subjects enclosed it into envelopes, those securing anonymity.

Instruments

The questionnaire tested four different variables and sociodemographic characteristics:

The first being – gender compliance. This variable was assessed using six questions (*eg. Being born a man/women determines my character*). It was adapted from a gender group identification scale (Wilson & Liu, 2003). (Cronbach α = .58.).

The second variable – gender roles in the family – was assessed using four questions (*eg. Women should make the final decision on the number of children the couple should have*). Items describe a characteristic and gender roles stereotypically believed to differentiate the sexes in the family. This scale was also an adaptation of the gender group identification scale (Wilson & Liu, 2003). (Cronbach α = .62.).

The variable – sexual behaviour – in which each statement expresses a gender, sex behaviour stereotypic pattern, was assessed using four questions (eg. *Men need sex more*,). (Cronbach α = .79.)

The last variable was – gender power dynamics. Three questions were used (*eg. It is much worse when the man is financially dependent in a relationship, than vice versa*). (Cronbach α = .76.)

Results

In order to evaluate TBI, we assessed changes in four indicators (1. gender roles in the family, 2. gender power dynamics, 3. sexual behavior, 4. gender compliance). See table 1

Table 1: Descriptive statistics

5 point scale	Before TBI		After TBI		
	Mean	SD	Mean	SD	Eta square
Gender roles in the family	2.57	0.89	2.43	0.98	0.005
Gender power dynamics	1.9	1.03	1.82	0.92	0.002
Sexual behavior	2.09	0.6	1.93	0.81	0.013
Gender compliance*	2.55	0.68	2.32	0.75	0.158

*$p < .05$

To assess whether there are any statistically significant differences between the means of the variables in pretest and posttest we used four ANOVA's. Only the variable - gender compliance- showed statistically significant change before and after the play ($F(180, 1) = 4,733$, $p = .031$). Other variables were not significant: gender roles in the family ($F(179, 1) = .923$, $p = .338$), gender power dynamics ($F(180,1) = .320$, $p = .572$), sexual behavior ($F(172,1) = 2.201$, $p = .140$).

Discussion and conclusion

Traditional gender roles have consequences on society that affects not only women but the whole social system. Therefore we should promote reviewing common and

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widely spread gender stereotypes. One of the possible interventions is theatre based intervention.

The results of partial TBI empirical evaluation show that it had some positive impact in changing gender stereotypes of young people. We see positive changes in all four measured variables, but only one indicator showed a significant change (gender compliance). Even the effects of statistically significant attitude change in one indicator are weak. One of the reasons may be that the moderators who led the intervention focused on the variable – gender compliance – and directed the discussion towards it. Also, we only examined the data from three towns, while TBI is scheduled to be performed in six more till the end of the year 2018. Even though only one variable had a significant result by now, we expect more empirically confirmed benefits of TBI in changing attitudes during the ongoing intervention.

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When Should We Stop Investing in a Scientific Project? The Halting Problem in Experimental Physics

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Abstract

The question of when to stop an unsuccessful experiment can be difficult to answer from an individual perspective. To help to guide these decisions, we turn to the social epistemology of science and investigate knowledge inquisition within a group. We focused on the expensive and lengthy experiments in high energy physics, which were suitable for citation-based analysis because of the relatively quick and reliable consensus about the importance of results in the field. In particular, we tested whether the time spent on a scientific project correlates with the project output. Our results are based on data from the high energy physics laboratory Fermilab. They point out that there is an epistemic saturation point in experimenting, after which the likelihood of obtaining major results drops. With time the number of less significant publications does increase, but highly cited ones do not get published. Since many projects continue to run after the epistemic saturation point, it becomes clearer that decisions made about continuing them are not always rational.

Keywords: project duration; epistemic saturation, efficiency, scientific experimentation

Introduction

Social epistemology of science investigates the knowledge acquisition within a scientific group. The epistemic efficiency of scientific knowledge acquisition across scientific institutions has been a topic of considerable interest in the social epistemology of science and science policy studies (Kitcher 1990, Milojević 2014, Olson *et al.* 2007, Zollman 2007). We focus on the time point of epistemic saturation in contemporary experimental physics. In high energy physics, a large number of researchers are appointed to work on the same project with instruments which usage requires substantial funding. This makes experiments in contemporary physics particularly interesting from the perspective of organizing research teams and optimizing resources invested in them.

One of the key resources invested in a project is the time spent on it. As a halting problem in informatics demarks some algorithms as never-stopping, determining the stopping rules governing scientific research has been broadly investigated in the philosophy of science literature (e.g. Rogger 2012, Steel 2013). These rules should signal when a scientist should stop gathering data and start analyzing them.

Fermilab is one of the biggest and most important high energy physics laboratories. Moreover, it has a thoroughly assembled online archive of conducted experiments.[4] Using data envelopment analysis on data from Fermilab, Perović *et al.* (2016) showed that longer experiments are inefficient in comparison to shorter ones. A new extended and predictive study showed that projects lasting longer than 500 days will tend to be inefficient (Sikimić *et al. submitted*). This means that there is an epistemic saturation point after which further time investment in a project will not be fruitful. In the present paper, we go a step further and investigated correlations between time and productive output of the project – results.

Method

We used data from 49 experiments run in Fermilab in the period between 1975 and 2003. The time distance allows for the accurate assessment of the project impact. All experiments were analyzed qualitatively. Linked experiments, precision measurements and calibrations of instruments were excluded from the analysis since their impact is not comparable to the impact of a single exploratory experiment. The data we used were the project duration, the number of researchers, the number of teams, and the number of publications categorized into six ranks:

1: famous papers (250 + citations); 2: very well-known papers (100–249 citations); 3: well-known papers (50–99 citations); 4: known papers (10–49 citations); 5: less known papers (1–9 citations); 6: unknown papers (0 citations). This categorization is provided by the physicists themselves and is given on the HEP Inspire platform (http://inspirehep.net). Self-citations were excluded. When we talk about project duration, we refer to the time used for the result gathering, as publications might be delayed and not necessarily correlated with the project duration. Finally, the consensus on results in high energy physics is reached relatively quickly and remains stable for a long period of time Schulte (2000). This means

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[4] The full list of Fermilab experiments can be found on the following link: <https://ccd.fnal.gov/techpubs/fermilab-reports-proposal.html>.

that citation analysis is a relevant measure of project success in the field. All this provides a good argument that the project results are mirrored by these six categories. By eliminating linked experiments, we focused our analysis on the experiments that started from scratch. We did not focus our analysis on the seniority ratio, because previous studies showed that the difference in the seniority ratio can only be considered as a secondary factor (Perović at al. 2016). The team size, on the other hand, played a more important role – smaller teams outperformed large ones.

Results

The results show a weak negative correlation between time and very well-known papers, i.e. the papers classified as second in rank. The correlation coefficient is -0.083 (Figure 1).
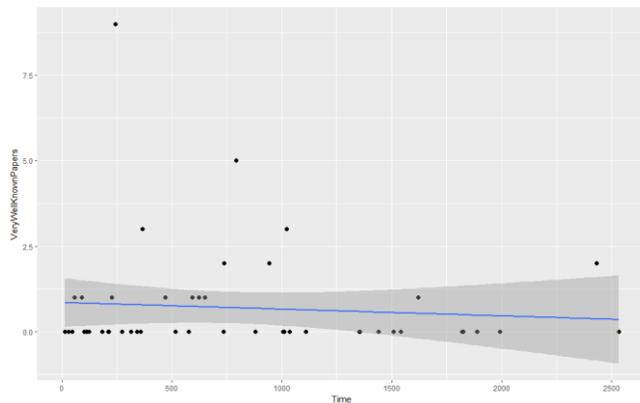

Figure 1: Correlation between time in days and the number of very well-known papers.

Also, no significant correlation was found between time and number of famous papers i.e. papers of the highest rank. This was expectable since their total number was small (eight papers from all the 49 projects). Interestingly, all but one project resulting in several very well-known and famous publications lasted less than 3 years. On the other hand, with the time the number of publications with lower rank does increase. Yet the correlations are weak; the correlation coefficients of publications from rank 4 to 6 and time are between 0.223 and 0.280 (Figure 2). This means that over time scientists continue to put effort into their projects, even when important results are missing.

   Another interesting point is that the number of researchers is positively correlated with the number of unknown and less known papers, but not with papers of the two highest ranks. This indicates that investing more human resources will bring some results, but not exceptional ones. As expected, the number of researchers is correlated with the number of teams (Figure 2).
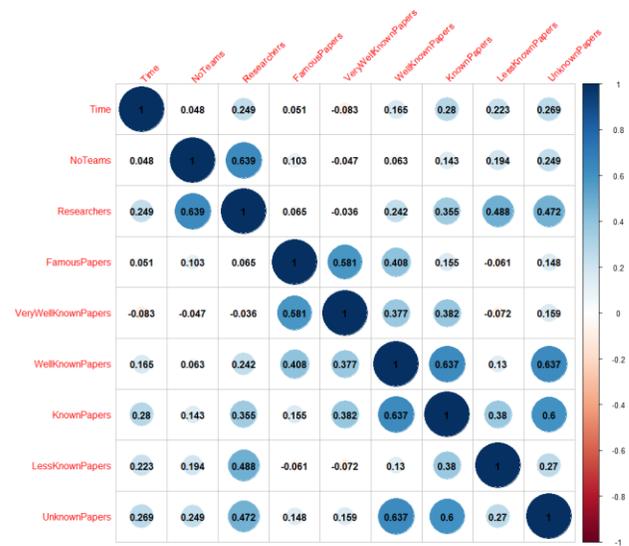

Figure 2: Table of correlations.

There is a strong positive correlation between the number of articles with higher rank among each other, while their correlation with the number of less known articles is negative (Figure 2). This indicates that there is a relatively clear-cut between fruitful and futile projects.
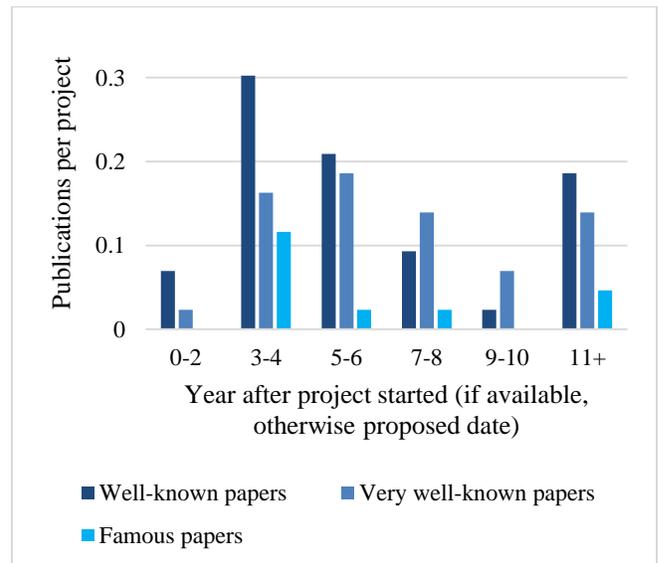

Figure 3: Publications per project over time after the project started.

Finally, the longitudinal analysis (Figure 3) shows that the majority of well-known and famous papers are published 3-4 years after a project started. Note that some articles are published years after the experiments were conducted.

Conclusions and Further Research

The results indicate that simple extension of time spent on a project in high energy physics will not guarantee new and

exciting results. These findings concord with previous research which argued that there is an epistemic saturation point in experimental physics (Perović *et al.* 2016, Sikimić *et al. submitted*). This realization might limit unnecessary and futile investments in already costly and lengthy experiments. The fact that research in experimental physics follows a strict inductive pattern governed by conservation laws (Schulte 2000), strengthens the argument in favour of the epistemic saturation point in the field.

From the perspective of a scientist, the question of when to drop an unsuccessful experiment is particularly difficult because of the psychological principle of commitment and consistency. Once the commitment is made, i.e. once the research direction is established, one feels pressured to continue in the direction of her original believes in order to be consistent with them, even in situations when this is not reasonable (Cialdini 2001). This phenomenon leads to the irrational investment of resources (e.g. time, funding, human resources and equipment). Cleary, one can investigate internal reasons for unsuccessfulness of any experiment. However, using quantitative data we are able to predict the optimal duration of a successful experiment.

Sometimes scientists keep investing in projects that are not giving results. During this struggle they do tend to publish less influential results, however, as shown, this type of investment will not reflect upon influential results. As further research, it would be interesting to see what lies behind this phenomenon. Apart from the practical financial pressure, the principle of commitment and consistency with previous believes (e.g. Cialdini 2001) is an important component in making the decision not to stop with an experiment, and as such, it should be investigated. Finally, these findings might relate to a sunk cost bias, which occurs when people continue to unsuccessfully invest, because of their previous investments which did not pay off (Arkes and Blumer, 1985).

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Improvement of mental health of adolescents: Testing the role of preventive programmes in the community

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Abstract

In this research, we tested weather educational-preventive programmes in the community can improve the mental health of youngsters. In the period from 2015 to 2017 quasi-experimental research had been conducted on the same sample, with repeated measurements. After baseline assessment, a two-year intervention had been implemented (the so-called *"Program Y"*) followed by the endline assessment. The Program had been implemented in 11 BiH cities, and the majority of participants were in Banja Luka, Mostar and Sarajevo. In both phases of the testing 1292 adolescent (654 young men, 638 young women), age 15 to 18, filled out the questionnaire. Mental health had been measured with the Inventory of mental health questionnaire. Two-year intervention program comprised of participation in a set of workshops, social campaigns, and social youth clubs. Mental health of young women is more positively rated at the end of the Program if compared with the baseline assessment. Significant differences had not been noted with young men. Positive changes had been determined in cities where the preventive program was more intense and lasted longer.

Keywords: mental health; prevention; adolescents

Introduction

Many factors contribute to our mental health, including biological factors, life experiences, family history and social context of peers, schools, and families. A number of studies have found that social support or connection to family, peers, school, and community are important in promoting the mental health of young people (e.g. Catalano et al., 2004) and that youth engagement is a key protective factor in promoting positive mental health (Toumbourou et al., 2000). The relationships with friends are related to happiness and life satisfaction, directly and through their impact on health (Helliwell, Putnam, 2004).

There is strong evidence that community-based programs are helpful in promoting the positive mental health of youth (e.g. Connell and Gambone, 1999). Gilligan (2000) points out the importance of connectedness or 'membership' to positive mental health for vulnerable youth. Programs that appear to have been most successful at promoting positive mental health are those which have created a sense of connectivity with community, school or peers. Community programs that help a young person establish and maintain relationships with parents, siblings and friends can also assist youth to improve their responsibility-taking and problem-solving capacity, and ensure an easier transition through adolescence and into adulthood (O'Brien et al., 2004).

Based on these findings we tried to determine if certain educational-preventive programs in Bosnia and Herzegovina communities can improve the mental health of youth? The main assumption is that those programs where youngsters gain useful knowledge and life skills, as well as accomplish positive social interaction with peer groups, leave a positive effect on mental health of youngsters. Said this, educational topics not necessarily have to be connected with mental health, but intensity and length of the prevention program can be of importance. Researches that gave similar results contribute to this hypothesis (O'Brien et al., 2004; Gilligan, 2000; Connell and Gambone, 1999).

Method

The quasi-experimental research was conducted in several stages. In the first half of 2015, we conducted the first phase of the research and collect data about the mental health of students. In the second stage, students took part in the intervention program. In the third phase, in May 2017, we conducted a final survey. Methods included self-administered quantitative surveys completed by participants before and after the intervention.

Mental health was measured through a shorter version of *Mental health inventory*. This scale had five items (range is from 1 to 5). Three items were related to the presence of psychological distress, and two to psychological well-being in last month. Examples of items are: "*How much time during the last month have you: been a very nervous person / felt calm and peaceful*?" Authors of revised scale are Rumpf et al. (2001). All research participants gave their consent to participate in the research.

Main locations where the research has been conducted were Banja Luka, Mostar and Sarajevo. Additionally, the program, in shorter form, has been implemented in several other cities: Bijeljina, Gradiška, Istočno Sarajevo, Jablanica, Kneževo, Novi Travnik, Visoko and Vlasenica. In these cities, the program lasted twice as short. Fewer workshops and promotional events were held, with a smaller number of students enrolled. All respondents were young men and women, aged 15-18 years. The final sample only included respondents who filled the questionnaire in both phases. So, the overall sample in all cities was 1292 (654 young men and 638 young women).

Between two research phases, young men and young women were included in an intervention program, so-called "Program Y". Package of activities was implemented in each of the schools, including group educational workshops and "Be a Man" Campaign. Workshop sessions addressed multiple topics, including gender norms, expressing emotions, anger management, role-models, sexual health, drugs and alcohol use, peer violence etc. Campaigns included regionally and locally developed campaigns that promote non-violence, gender equality, and healthy relationships

Results

Table 1: Mental health of young men before (Baseline-B) and after (Endline-E) the Program

		Phase	N	M	z	p
Psychological distress	young men	B	600	2.11	-0.38	0.704
		E	602	2.1		
	young women	B	620	2.47	-2.599	.009**
		E	620	2.37		
Psychological wellbeing	young men	B	596	3.76	-1.942	0.052
		E	603	3.67		
	young women	B	619	3.57	-2.82	.004**
		E	618	3.67		
Mental health index (total)	young men	B	592	3.83	-0.579	0.563
		E	598	3.81		
	young women	B	618	3.54	-2.775	.006**
		E	618	3.64		

** the difference is significant at the $p < 0.01$ level

This table presents results on the mental health of young men and women before (baseline-B) and after (endline-E) implementation of the Program Y. Results we got show that there is no statistically significant change in the mental health of young men at the beginning and at the end of the program.

In the period of endline research psychological distress of young women is lower, but psychological well-being and overall average value of mental health are higher. These data are affirmative and they illustrate the tendency that implemented Program Y had a positive effect on the mental health of young women.

In Figure 1, we will present a difference in mental health between young men and young women from different cities. Students from Banja Luka, Mostar and Sarajevo participated in the intervention program that lasted longer than the one implemented in other cities.

A two-way repeated ANOVA was conducted that examined the effect of city and research phases on mental health. There was a statistically significant interaction between the research phases, cities on the mental health of young men, $F(1, 569) = 6.312$, $p = .012$. This interaction was not statistically significant on the sub-sample of young women, $F(1, 612) = .011$, $p = .915$. So, we can conclude, there is a tendency that greater exposure of youth to intervention program can contribute to their better mental health.
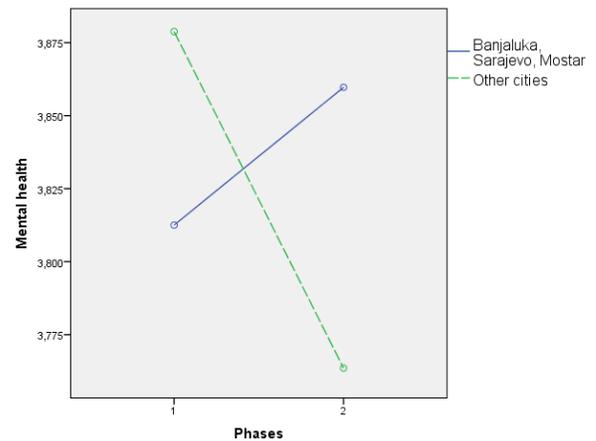

Figure 1: Interaction of research phase and city groups on the overall mental health of young men

Discussion

Results we got show that there is no statistically significant change in the mental health of young men, but results on the mental health of young women after Program Y are more positive. These results, about bigger possible effects of the Program on young women, are compatible with some findings from previous programs. Some programs designed to improve self-image, self-esteem, and self-efficacy have demonstrated success for female participants (Le Croy,

2004). However, other education-based interventions have been less effective for males (Fink, 2005).

It is interesting that the mental health of youth at the end of the Program was better in cities where Program Y lasted longer. Bearing in mind that in the period of baseline survey mental health was on a similar level in all cities, this difference can not be attributed to some social differences between cities, these data are affirmative and they illustrate the tendency that implemented Program Y had a positive effect on the mental health of youth, especially if it lasted more than one year. The importance of the length of preventive programs was also confirmed by Werner-Seidler et al. (2017). In their research, small effects were evident after 12 months of work.

Results we obtained can be interpreted in several ways. Mental health of youth is a complex phenomenon that cannot be easily influenced. This is the especially challenging goal if we are talking about adolescents who go through different development and life challenges. Greater life challenges and greater pressure that youngsters feel, can have a negative influence on their mental health. This can be one of the explanations why the Program did not have a greater impact.

Additionally, it is possible that the Program can be further improved. In future projects should be more explore what workshops have more effect; are youngsters more comfortable when working with peer educators or adults; what is an optimal length of the program; what modus operandi is mostly acceptable by the youngsters, etc. In order for a program to be more successful in the future, recommendations from some international studies and programs are useful. The McCreary Centre Society (Smith, et al. 2011) propose following protective factors that promote mental health and youth development: presence of supportive adults, feeling skilled and competent, having friends with healthy attitudes to risky behaviors, feeling connected to school and family, engaging extracurricular activities, and feeling listened to and valued within those activities. Allen et al. (1997) suggested that youth programs should provide meaningful volunteer work, sense of young people autonomy and a forum to make important social connections.

We can conclude that in Bosnia and Herzegovina assessment of influence by certain preventive programs on the mental health of youth is practically in an early stage. The first priority is for different governmental and non-governmental institutions to start to continuously create strategies and programs that deal with the improvement of mental health of youngsters. Current experiences suggest that the most successful strategies are those that focus on positive rather than negative outcomes, allow youth to develop skills and competencies, enhance connectedness, and provide opportunities for youth to contribute to their community.

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Validation of the Aggressive Beliefs and Attitudes – short form

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Abstract

Aggressive beliefs and attitudes represent justification mechanisms to rationalize aggressive behavior. In the full form of Explicit Aggressive Beliefs and Attitudes Scale (ABA), several aggressive biases were included: Hostile attribution, Potency, Retribution, Victimization by powerful others, Derogation of the target and Social discounting. However, in the short form, only three were included: Retribution, Victimization by powerful others and Derogation of the target. The main goal of this research was to validate the short form of ABAS. Based on the parallel analysis, two factors were extracted: Attitudes about victimization and Retribution. Correlation between the two factors was low, which points out that factors are distinctive. Retribution obtained high positive correlations with aggressiveness dimensions, and negative with Honesty-Humility and Agreeableness, while Attitudes about victimization showed only small to moderate correlations with aggressiveness dimensions and personality traits. Results questioned the use of ABA - short form not only because of its limited informativity but also because of construct validity, given that scale contained mixed traits and attitudes domains.

Keywords: Aggressive Beliefs and Attitudes; validation; HEXACO; aggressiveness

Introduction

Aggressive beliefs and attitudes represent the mechanism of reasoning for aggressive people to rely on in order to justify their aggressive behavior. According to Jaims (1998), most of the people who exhibit aggressive behavior do not perceive themselves as aggressive. In most cases, they have a feeling that they are oppressed and exposed to inadequate or unfair treatment, and therefore seek revenge and retaliation in order to correct the injustice. Jaims (1998) listed six types of aggressive beliefs and attitudes: 1. Hostile attribution – tendency to see harmful intent in the actions of others, 2. Potency – the tendency to frame and reason using the contrast of strength versus weakness, 3. Retribution – tendency to confer logical priority to retaliation over reconciliation, 4. Victimization by powerful others – the tendency to frame oneself as a victim and as being exploited by the powerful others, 5. Derogation of target – an attempt to make the target more deserving of aggression, and 6. Social discounting – tendency to call on socially unorthodox and antisocial beliefs to interpret and analyze social events and relationships.

Michel, Pace, Edun, Sawhney, and Tomas (2014) have been developed 30-item Explicit Aggressive Beliefs and Attitudes Scale (ABA) which operationalized the mentioned types of aggressive beliefs and attitudes. Results confirmed the 6-factor structure and Cronbach's alphas of scale's scores

were good (ranged from .79 to .92), as the total scale's alpha ($\alpha = .91$). Also, convergent validity was confirmed via correlations with other measures of implicit and explicit aggression and Five-Factor model of personality (especially Agreeableness). Correlations with aggression measures are around .50, indicating that there is enough distinction between aggression and ABA measures.

Not long after, a short form of ABA was recommended (ABA – short form; Michael, Hartman, & Gitter, 2015). The items were selected based on communality in the original form. Short form contains 8 items that include 3 out of 6 types of aggressive beliefs and attitudes: Victimization by powerful others, Derogation of target and Retribution. Results confirmed hierarchical structure with 3 first-order factors, as the convergent and discriminant validity in correlations with several measures of individual differences (positive and negative affect, aggression and personality traits such are Agreeableness, Conscientiousness and Neuroticism). However, this form has been never used in its original form, as an 8-item measure. Therefore, the aim of this study is to validate the Aggressive Beliefs and Attitudes Scale – short form. We expect that three factors could be extracted. Regarding convergent validity, we expected that factors will show significant, but moderate positive correlations with aggressiveness dimensions and negative with Agreeableness and Honesty-Humility traits as traits which negatively contribute to the antagonistic tendencies.

Method

Participants

This research was conducted on a convenient sample of 443 participants from the general population from Serbia (50.1% males), aged between 19 and 49 years ($M = 28.14$, $SD = 6.66$). Bachelor studies students majoring in psychology took part in gathering this data (as a part of their pre-exam assignments).

Instruments

Aggressive Beliefs and Attitudes Scale – short form (ABAS – short form: Michael et al., 2015). ABAS – short form contains 8 items which measure Victimization by powerful others, Derogation of target and Retribution as the types of aggressive beliefs and attitudes. ABAS-short form version in Serbian used in this research can be found in an attachment number 1.

Aggressiveness Questionnaire AVDH (Dinić, Mitrović, & Smederevac, 2014). AVDH contains 23 items and measures

four dimensions of aggressiveness: Anger ($n = 5$, $\alpha = .88$), Vengefulness ($n = 6$, $\alpha = .88$), Dominance ($n = 7$, $\alpha = .84$) and Hostility ($n = 5$, $\alpha = .76$).

HEXACO-60 (Ashton & Lee, 2009, for Serbian adaptation see Međedović, Čolović, Dinić, & Smederevac, in press). HEXACO-60 is short form of HEXACO-PI-R and measures six lexical basic personality traits (each per 10 items): Honesty–Humility ($\alpha = .79$), Emotionality ($\alpha = .77$), Extraversion ($\alpha = .78$), Agreeableness ($\alpha = .71$), Conscientiousness ($\alpha = .83$) and Openness ($\alpha = .80$).

Results

Exploratory factor analysis

In order to explore the latent structure of the ABAS – short form, principal axis factoring method was used and Promax rotation. Results of parallel analysis (O'Connor, 2000) showed that two factors could be extracted (Table 1) with eigenvalues of 3.14 (simulated eigenvalue of 95. percentile was 1.27) and 1.68 (1.18).

Table 1*: Descriptives and factor loadings of the Aggressive Beliefs and Attitudes Scale – short form*

Items	M	SD	r	Loadings 1	2
1. The wealthy capitalize on those who are less fortunate.	3.83	1.17	.66	.82	
3. The rich get richer by taking advantage of the poor.	3.47	1.21	.60	.76	
5. I believe that large corporations exploit their employees.	3.81	1.11	.54	.63	
8. Some people are simply horrible human beings.	3.82	1.21	.53	.53	
2. Some people are just bad people.	4.11	1.08	.49	.49	
4. Getting back at others makes me feel better.	1.55	0.97	.66		.81
6. If I am betrayed then I have the right to retaliate.	1.99	1.19	.65		.80
7 If someone disrespects me, I feel the need to get even.	2.40	1.24	.54		.60
M (SD)				3.81 (0.85)	1.98 (0.94)
α				.79	.77

Note. *r* – Corrected item-total correlation.

The first factor contains 5 items (33.03% of common variance) and refers to exploitation of weak and poor people

by powerful people, as the derogation of the victims. Therefore, it named as Attitudes about victimization. The second factor contains 3 items (15.62% of common variance) and refers to justifying revenge, thus it named as Retribution. Correlation between those two factors was significant, but low (on factor scores it was .32, and on sum scores, it was .29).

Cronbach's alphas of factors were acceptable given the small number of items (Table 1). Results of the *t*-tests showed that the average score on the Retribution is statistically significantly lower compared to Attitude about victimization ($t_{(442)} = 35.08$, $p < .001$).

Convergent and discriminant validity

Retribution obtained high and positive correlations with all aggressiveness dimensions, especially with Vengefulness (Table 2). Among HEXACO traits, Retribution obtained moderate negative correlations with Honesty-Humility and Agreeableness. On the other side, Attitudes about victimization showed small to moderate correlations with aggressiveness dimensions, with the highest correlation with Hostility. Among HEXACO traits, this factor negatively correlated only to Agreeableness and Honesty-Humility, but small in magnitude.

Table 2*: Correlations between ABAS – short form and AVDH and HEXACO-60*

		Attitudes about victimiza-tion	Retribu-tion
AVDH	Aggressive-ness	.20**	.58**
	Vengefulness	.27**	.84**
	Dominance	.23**	.59**
	Hostility	.34**	.54**
HEXACO-60	Honesty–Humility	-.14**	-.42**
	Emotionality	.05	.02
	Extraversion	-.04	-.02
	Agreeableness	-.17**	-.37**
	Conscientious-ness	-.08	-.24**
	Openness to Experience	.04	-.15**

**$p < .01$, *$p < .05$.

Discussion

The aim of this study was to validate Aggressive Beliefs and Attitude Scale – short form (ABA – short form: Michael et al., 2015). Results showed that two factors could be extracted, named as Attitudes about victimization and Retribution. Attitudes about victimization refer to the tendency of seeing the poor as victims of an unjust exploitation by the rich and powerful and aggression as a justified means of correcting injustice. Also, this factor refers to the persistence of

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characterizing the object of the aggression as evil or sinister and more deserving of aggression. Retribution represents the tendency of a person to respond with aggression and vengeance on the inadequate actions of the others, rather than respond with compromise or forgiveness. Persons who achieve high scores on this factor considers the aggression as provoked by the others and that the aggression is an act through which the aggressor defends him/her.

Based on the low mutual correlation and different intensity of validity correlations, we could conclude that the extracted dimensions are different. Retribution dimension is highly connected with all dimension of aggressiveness, especially with Vengefulness. It seems that this dimension is more close to aggressiveness as a trait, than the attitudes and beliefs. On the other hand, Attitudes about victimization seems not redundant to the dimensions of aggressiveness. Taken together, we could conclude that the use of ABA –short form is questionable not only because of its limited informativity but also because of construct validity, given that scale contains mixed traits and attitudes domains.

The limitation of this study is that only the construct of validity was tested. In future research criteria, validity should also be included, especially relations to antisocial and aggressive behavior. Also, measures of both aggressiveness and aggressive beliefs and attitudes should be included to explore the incremental validity of ABA - short form.

Acknowledgments

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Appendix
Serbian adaptation of ABAS-short form

Items

Bogati profitiraju na siromašnima.
Bogati postaju bogatiji tako što iskorišćavaju siromašne.
Verujem da velike korporacije iskorišćavaju svoje zaposlene.

Neki ljudi su prosto užasna ljudska bića.
Neki ljudi su prosto loši.
Osećam se bolje kada se osvetim drugome.
Ako sam izneveren, onda imam prava da se osvetim.
Ukoliko mi neko iskaže nepoštovanje, imam potrebu da mu vratim.